

BRITISH BRYOLOGICAL SOCIETY

PRESIDENT: Dr M.O. HILL



BULLETIN

No. 56

June, 1990

Edited by A.R. Perry
National Museum of Wales,
CARDIFF

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SUBSCRIPTIONS

The Membership Secretary (Mr A.V. Smith, 1 Carr Meadow Cottages, Glossop Road, Little Hayfield (Derbyshire), via Stockport, Cheshire, SK12 5NR) would be grateful to hear from any of you who have still not paid your 1990 subscription. Rates for the current year are £10 (\$23): £5 (\$12): £1 (\$2). North American members paying in \$US should remit directly to Professor Ronald Pursell.

REPORTS OF OFFICERS FOR 1989

a) GENERAL SECRETARY'S REPORT

It is with great regret that I have to report the death during the year of the following members: Mrs J. Appleyard, Mrs J.W. Fitzgerald, Mr O.B.J. French, Mr J.C. Gardiner, Dr S.W. Greene, Mr A.G. Kenneth, Prof. W.C. Steere, Mr E.L. Swann and Mr A.E. Wade. They had contributed to the life of the Society in many different ways, and the enthusiasm they all brought was of great benefit to the rest of us. Joan Appleyard and Prof. Steere were Honorary Members at the times of their death. Both Jean Fitzgerald and Jack Gardiner had also been valued members of Council.

As the accompanying reports will show, 1989 was a year of continuing effort and achievement. An attractive programme of meetings bound the Society together, thus providing the means for extending some of the many collective ventures, which have become a feature of members' bryological work.

A major landmark in this respect is the completion of the first of three volumes of an atlas of bryophyte distribution based on data contributed over a period of some 30 years by a very large number of members. Its publication, in collaboration with the Biological Records Centre, can be expected, not only to stimulate further recording activity, but also to advance other aspects of the Society's objectives. The cost of the atlas is to be subsidized by the Natural Environment Research Council through the Grants Committee of the Linnean Society, by the B.B.S. and, it is hoped, by other bodies to which application is being made.

Detailed knowledge of the frequency and distribution of British bryophytes ought also to boost conservation measures and to facilitate the maintenance of an up-to-date Red Data Book of threatened species, being compiled at the moment. This work is undertaken through our Conservation Committee, in conjunction with the Conservation Association of Botanical Societies (C.A.B.S.). In this connection, it should also be reported that the B.B.S. contributed £1,000 in support of C.A.B.S.' work in the year which saw the launch of the new conservation society, Plantlife.

The B.B.S. has attempted during 1989 to encourage much needed research in the tropics. Our Working Group on Tropical Bryology is hoping to make definite proposals in the New Year about the best ways forward, but initial steps have already been taken by Brian O'Shea, who has written a practical guide to bryophyte work in the tropics.

The booklet will be the second of a series of what it is hoped will become a collection of helpful introductory treatments. The first, volume 2 of the Special Volumes series, appeared during the year and is concerned with bryophyte chromosomes. The Publication Committee is assiduously pursuing the means to satisfy requests for more volumes.

To have maintained this level of activity, considerable time and effort have been contributed by all the officers concerned, as well as by many other B.B.S. members, all of whom deserve our thanks. Of those officers, two relinquished office at the end of the year, having given invaluable service to the Society over several years. The work of Giles Clarke as Bibliographer and of Stephen Jury as Membership Secretary is very greatly appreciated.

Despite considerable success during the year, it is imperative that we should not, as a Society, rest on our laurels. Figures show that overall membership has declined slightly over each of the past three years. Whatever its

significance, we look forward to the trend's reversal as officers put more ideas for education, publication, recording, conservation, meetings and, indeed, publicity into practice.

M.E. Newton
February, 1990

b) TREASURER'S REPORT

There has been considerable disruption during 1989 for this office. Dr Philip Stanley, who had newly taken on the post of Treasurer from Brian O'Shea at the beginning of the year, resigned in September when I became acting Treasurer. These unfortunate circumstances have meant an inevitable lack of continuity in the Society's accounts and I apologise for any lack of insight that this report betrays.

The figures given here are preliminary and as yet unaudited. Nevertheless they present a clear picture of the Society's financial status:

Profit/Loss

Income	£10,721
Expenditure	12,143
Loss	(£ 1,422)

Assets

Current Account	£ 2,208
Deposit Account	829
Girobank	362
Nat. Savings Bank	30,196
	<u>£33,595</u>

The overspend for the year is not large, but this is the second year in succession that we have sustained an overall loss and this is despite our income being boosted during the year by nearly £4,000 in interest payments.

We are in the fortunate position of being able to fund each year a certain number of projects which we consider to be in the interests of bryology. For us to remain in that position, we must ensure that our reserves are not depleted to any substantial extent. I therefore wholeheartedly agree with Brian O'Shea's comment in his financial report for 1987 that we need now to increase the subscriptions. I will therefore be recommending an increase to the AGM this autumn.

Our major expenditure during any year is always on the Journal. This year the costs were high because we published 520 pages rather than an estimated 400 in 1988 (Blackwell's account is paid in arrears). In addition, income through Blackwells' was rather lower than had been estimated for and the result was that our final invoice from Blackwell's was for £8,361.

Other substantial items of expenditure during 1989 were: £1,000 donation to the Conservation Association of Botanical Societies towards the salary of their Conservation Officer; £350 towards the mapping scheme and preparation of the Atlas; £318 to the Steere Memorial Fund.

It is an unfortunate fact of life that the degree to which the officers of the

Society are able to 'lose' their expenses to their employing institutions is a great deal less than it once was. This means that the Society is now having to bear costs of its own administration which had previously been hidden.

Wallace Memorial Fund

Brought forward	£1,372
Interest	137
	<hr/>
	£1,509

No donations were received, or money spent in 1989.

Giles Clarke
March, 1990

c) BIBLIOGRAPHER'S REPORT

As usual, two lists of current bryological literature have again been prepared for publication in the Journal. An innovation this year has been the production of the lists via a computer disk which has been skilfully compiled by Mrs Helen D'Aranjo and which is passed directly for printing, thus avoiding manual typesetting.

The end of 1989 also sees the end of my reign as bibliographer for the Society. May I take this opportunity of sincerely thanking those members who have provided references for inclusion in the list. And may I encourage anybody who has the inclination to send references, particularly the more abstruse ones, to my successor in the post, Len Ellis of the Natural History Museum.

Giles Clarke
December, 1989

d) BULLETIN EDITOR'S REPORT

Two Bulletins were again prepared and published during the year. Deadlines for the Bulletins are 1 June and 1 December.

At the Council meeting in autumn I was asked to expand the interest and coverage of the Bulletin and the March 1990 issue will, I hope, show this trend. However, in order to keep it up, articles of general and specific interest to our members are constantly required and I urge you all to consider submitting notes and articles for possible inclusion in future issues.

A.R. Perry
March, 1990

e) CONSERVATION OFFICER'S REPORT

1. RCS has continued to be involved with the Steering Group of CABS for the project on Conservation Requirements for Threatened Lower Plants ("Red Data Book" project). Work on the bryophytes was started by the Project Officer (Nick Stewart) towards the end of the year, and he has been in frequent contact with RCS about this part of the work.

2. RCS has also been involved with CABS work generally in his capacity as Chairman. As the BBS was entitled to another representative on the Management Committee, Dr M.A.S. Burton has filled this vacancy. Towards the end of the year the new plant conservation society known as Plantlife (previously referred

to as the Plants Trust) was launched (with David Bellamy as President); discussions were in progress at the end of the year on a merger of CABS with Plantlife. It is intended that Plantlife will carry out various projects on conservation of plants and it is expected that bryophytes will in due course be included in these.

3. During the year, the CABS Code of Conduct was produced, including references to lower plants, including bryophytes. Copies were sent to members with the July Bulletin.

4. RCS drafted a paper on a proposal for BBS Regional recorders. This was considered by the Conservation Committee and subsequently presented to Council, which approved it in principle and appointed a working party to pursue the matter further.

5. Members of the Conservation Committee were active during the year. For example, D.G. Long arranged for a NCC-funded contract for a bryophyte survey of snow-beds in Scotland (administered for NCC by P.H. Pitkin). One outcome of this survey has been the discovery of Marsupella arctica, new to Britain.

6. RCS has been in frequent contact with N. Hodgetts, both as a member of the Conservation Committee and as NCC's Lower Plant Specialist. C.D. Preston has been co-opted to the Conservation Committee for the duration of the Threatened Lower Plants project.

7. A number of other items have been dealt with by RCS, consulting with members of the Conservation Committee as appropriate.

R.C. Stern
March, 1990

f) CURATOR'S REPORT

Voucher specimens incorporated during the year were 211 mosses and 102 hepatics. I thank my colleague, Mr Alan Orange (who led the BBS 1989 summer field excursion in Cardiganshire) for dealing with the 13 loans out from BBSUK, totalling 259 specimens.

The list of vice-comital holdings of hepatics in BBSUK has been put to very great use by the Hepatic Recorder, David Long, who has spent a great deal of time checking specimens and thus correcting the list. Tom Blockeel has brought our Racomitrium heterostichum agg. specimens in line with modern revisionary work and Jean Paton has revised all Riccia warnstorffii specimens. BBSUK is becoming an excellent working herbarium for the British Isles.

A.R. Perry
March, 1990

g) REPORT OF JOURNAL OF BRYOLOGY EDITOR

Problems that arose leading to delays in the publication of Journal of Bryology during 1988 have now, hopefully, been overcome and the 1989 parts were published more or less on time. In an attempt to obtain consistency of style (e.g. citation of collector's numbers, labelling of legends, abbreviations, spelling etc.) a document has been drawn up jointly with Blackwell's sub-editor so that future changes of editor or sub-editor will cause fewer problems than in the past.

Fewer papers were received during 1989 than in the previous four or five years,

especially those of a non-taxonomic or floristic nature, but this is probably just a random fluctuation.

Brian O'Shea and Philip Stanley very kindly assisted with checking proofs and Alan Crundwell again undertook the onerous task of preparing an index. I am most grateful for their help.

A.J.E. Smith
February, 1990

h) LIBRARIAN'S REPORT

Sales:	J. Bryology (parts)	28
	TBBS (parts)	47
	Distribution of Bryophytes	23
	Census Catalogues (old)	23
	Mosses of Europe & Azores	15
	Hepatics of Europe & Azores	14
	BBS Bulletins	7
	Library Catalogues	9
	Moss Wall Charts	12
	Special Volume: Chromosomes	19
	Special Volume: Jubilee	1
	German/English Glossary	2
	x 20 lenses	14
	Stainless steel forceps	14
	BBS ties	6
	Microscopes	3
Loans:	35mm slide sets	2
	Micrometer slide loan	3

The Mosses of Europe and the Azores check list is now out of print, as are parts 2, 3 and 4 of TBBS volume 2. Several Russian microscopes (second hand) are still available at £80.

Ken Adams
January, 1990

i) MAPPING SECRETARY'S REPORT

Compilation and publication of the Atlas of British Bryophytes is proceeding excellently. The introduction, maps and map legends of volume 1 (Hepatics) were due to be completed by the end of December and there was only about a month's delay in their submission to the publisher, Harley Books. This must be a record for submission of a work of such complexity involving so many people. This promptitude was due entirely to the efforts of Mark Hill, Chris Preston and their assistants at Monks Wood, and it will be clear when the volumes are published that they have done an excellent job.

Marcus Yeo completed his work tracing missing vice-county records of liverworts and mosses and where localities have still not been traced the information has been passed on to the Recorders. In his work he has rendered valuable service both to mapping bryophyte distribution and to the vice-county recording system.

A.J.E. Smith
February 1990

j) MEETINGS SECRETARY'S REPORT

During 1989 we were able to maintain our traditional four meetings a year programme, and to supplement it with a much appreciated overseas meeting. This is no mean feat for our relatively modest active membership and I heartily thank all those who made this possible by cheerfully organising meetings of an excellent standard.

These included Vanessa Williams' and Rod Stern's Spring meeting in Salisbury, Alan Orange's summer meeting in Aberystwyth, the AGM-symposium weekend energetically hosted in Lincoln by Mark Seaward and the productive beginners workshop in south-west London organised by Jennifer Ide. The overseas meeting in the Algarve presented especially difficult problems, ably and successfully overcome by Roy Perry.

Looking to the future, the programme for 1990 promises field meetings in Lancashire and Ulster, a special AGM-symposium weekend in Cambridge and a workshop in bryophyte photography in Manchester. The programme for 1991 is now also nearly complete. Please keep sending me your views and ideas on meetings so that we can continue the varied and interesting series of meetings established by previous meetings secretaries.

Philip Lightowlers
February, 1990

k) MEMBERSHIP SECRETARY'S REPORT

Table 1

Membership Numbers

Year	1985	1986	1987	1988	1989
New Members	32	31	33	26	27
Members Lost by					
Death	*	*	*	3	8
Resignation	5	5	9	8	11
Other	*	*	(33)	(18)	10
Total Losses	*	(16)	42	29	30
NETT TOTAL	529	544	535	532	(529)**
Comprising:					
Ordinary and Junior:	496	514	503	506	(500)
Family:	19	18	18	13	(15)
Honorary:	14	12	14	13	14

Notes

* : not known with sufficient certainty to estimate
(): best estimate
** : the actual number on file and on Blackwell's list is 555 but a number of these must be regarded as lost to the membership list. Unfortunately an exact figure cannot be given as members are still responding to the reminder sent out in December!

Although most of the work for 1989 was done by Stephen Jury, all of the records were passed over to me in November and therefore this report is compiled by me and any errors must be my responsibility. I nevertheless gratefully acknowledge the help given to me by Stephen.

With the data available in past and present records I have compiled Table 1 (on previous page) which indicates the current membership position.

In December 73 reminders were sent out to members whose subscriptions were apparently unpaid. To date (20th January) I have received 40 replies of which 38 have resulted in the members concerned being credited with their subscriptions but there have been notifications of 1 death and 4 resignations. (3 of these paid up nevertheless).

Professor Pursell has agreed to continue to collect subscriptions for North American Members and this is a service for which I am very grateful as it saves both time and money.

I have been able to computerise the records of members and can therefore at least save time and effort in printing labels but although I should be able to produce updates for membership lists I cannot at present produce a complete list in such an attractive format as the current one which was printed by Reading University. If some computerate person can produce software which will run on my Amstrad PCW8256 then I shall be very grateful!

A.V. Smith
January, 1990

1) PUBLICITY OFFICER'S REPORT

TRAVELLING EXHIBITION. It is encouraging to hear that the travelling Exhibition is travelling well, both in terms of bookings and response, as well as wearability. It seems to everybody's advantage to leave it under the aegis of Bradford City Council so long as they can effect bookings around the country.

REDESIGN OF BBS LOGO. At the autumn 1989 Lincoln meeting, sixteen new versions of the BBS logo were exhibited, being permutations of four variations in weight and spacing of lettering, and two versions of the twin moss motif. These were reproduced at various sizes, including letterhead size. Based on members's response, a final seventeenth version with new lettering and a further modified motif was drawn, and is now being printed on the BBS letterhead. The design is similar but bolder than the older version, and I hope meets with members' approval.

In addition to these, a modification of the motif has been drawn for larger display purposes, enabling attractive 2-colour "stained-glass-style" infill. This would have been suitable for the proposed T-shirt logo, or for display boards, etc. The redesigns (including the modified version) were based on a compromise between that on the old letterheads, and the original source drawing

of Pottia bryoides in A.J.E. Smith's Flora.

T-SHIRTS. The somewhat informal decision at Lincoln to alter the idea of logoed T-shirts to the more acceptable sweat-shirts (with a more discrete logo in the breast pocket position) has run into costing difficulties. 100 T-shirts (2-colour logo as agreed) cost £595, but sweat-shirts would cost £1,395 or £1,795 depending on quality (prices all inclusive). Cheaper quotations are certainly possible, but with undefined quality and without allowing a selection of sizes (e.g. 40:L + 20:EL + 20:M). Council must reconsider this issue.

POSTCARDS. Council might like to consider the much cheaper outlay of bryophyte postcards. Prices vary from 9p to 20p each depending on quantity, e.g. £207 (incl.) for 3000, or £50 for 250. This last option would allow five designs of 250 each, for £250. A competition to select a set of five colour slides might be worth considering (to be judged by NON-photographers!). If this "pilot" run proves successful, the society might consider larger (and relatively cheaper) runs for marketing to museums, etc.

CHURCHYARDS. I have also written to Peter Burman, co-author of "The Churchyards Handbook" with regard to the poor coverage of mosses.

S.R. Edwards
March, 1990

m) READING CIRCLE SECRETARY'S REPORT

The number of subscribers now stands at 29. There have been some problems with receipt of journals by the BBS library during the year, with no issues of three of the journals normally circulated being received. Back issues will thus be circulated in 1990. Hopefully in future more regular circulation of contents lists for up to date issues can be achieved. Contents lists for fourteen issues of journals were circulated to members, and ten articles from these were sent to five members. An additional 22 articles from the end of 1988 contents lists were supplied to 11 members.

Financial statement

Income

Members' credit at 1.1.89	£111.42
Income (cheques and cash)	£ 65.00
Total	£168.73

Expenditure

Photocopies supplied	£ 34.11
Postage	£ 23.38
Administration (postage, copies)	£ 6.32
Total	£ 63.81

Excess of income over expenditure	£104.92
Less members' credit at 31.12.89	£104.44

Balance of income over expenditure	£ 0.48
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M.A.S. Burton
March, 1990

n) REPORT OF THE RECORDER FOR HEPATICS

The number of vouchers received was well down on 1988 and included only 48 recent new records, of which only one was from Ireland, the others equally divided between England, Wales and Scotland, as is detailed below:

	New records collected 1988-9	New records collected pre-1988	Deletions	Replacements
England	15	6	49	14
Wales	16	3	5	0
Scotland	16	3	25	5
Ireland	1	7	44	18
Total	48	19	123	37

Some of the more noteworthy new records are Riccia rhenana, a rareley-recorded taxon, discovered in Worcestershire, Cephaloziella stellulifera in Cardigan, Scapania paludicola in a new Welsh site in Brecon, Anastrophyllum joergensenii in a new vice-county (S. Aberdeen) in the Eastern Highlands, Scapania ornithopodioides on a new island, Arran (Oceanic-montane Hepatics are surprisingly rare or absent from many of the Scottish islands), and two very rare Marsupella species in new counties, M. boeckii in Easterness and M. sparsifolia in Banff.

The most diligent recorder in 1989 has been Marcus Yeo, who in chasing up innumerable hepatic county records (and their grid references) for the BBS Bryophyte Atlas has revealed about 150 Census Catalogue entries lacking data at the Biological Records Centre and unsupported by a published reference or voucher specimen. As a result of careful searching by Donal Synnott (DBN) and Roy Perry (BBSUK and NMW), substitute vouchers for about a quarter of these have been traced. I am extremely grateful to all three for their time-consuming work, and to Jean Paton who very kindly checked a number of the more critical vouchers received.

D.G. Long
February, 1990

o) REPORT OF THE RECORDER FOR MOSSES

The number of records is much reduced from previous years, largely because of the paucity of records from Wales, Scotland and Ireland, and because the meetings of the Society in 1989 were held in fairly well-worked areas. However a number of the records are of special interest. Several reports of epiphytic species have been most unexpected, particularly those of Orthotrichum obtusifolium in East Anglia, O. pallens in Derbyshire, and O. striatum and Ulota crispa var. norvegica in Greater London. Notable extensions of range have been those of Tortula freibergii in Greater Manchester, Fissidens rivularis in Derbyshire and Bryum creberrimum new to Ireland. Outstanding in Scotland is the new station for Paraleucobryum longifolium. The record of Dicranum leioneuron from Wales suggests that the taxon, whatever its status, is not confined to bogs and may be widespread in other habitats.

An analysis of the year's records follows:

	New records collected 1988-9	New records collected pre-1988	Deletions
England	85	10	0
Wales	9	2	0
Scotland	23	2	0
Ireland	2	6	0
Totals	119	20	0

Thanks are due to collectors for the notable improvement in the data provided on packets, but a few are still deficient. To assist in localising records, 10km grid squares are now being published in the lists of new records, and these should be provided on all packets. More accurate grids are of course desirable but will not be published. Collectors are also asked to include details of habitat and altitude on packets, and to ensure that names of localities are written clearly or typed.

Finally, I wish to thank Martin Corley, Alan Crundwell, Mark Hill, David Long, Tony Smith and Harold Whitehouse for their assistance with specimens and sundry other queries.

T.L. Blockeel
February, 1990

MINUTES OF THE ANNUAL GENERAL MEETING, LINCOLN, 1989

Minutes of the Annual General Meeting held at Edward King House, Lincoln, at 4.30pm on Saturday, September 23rd, 1989.

PRESENT: Mr P.J. Wanstall (President, in the chair) and 40 other members. The President opened the meeting by recording the deaths in the past year of Mrs J. Appleyard, Mrs J.W. Fitzgerald, Mr O.B.J. French, Mr J.C. Gardiner, Dr S.W. Greene, Mr A.G. Kenneth, Mrs F.D.J. Smith, Prof. W.C. Steere, Mr E.L. Swann and Mr A.E. Wade, and members stood as a mark of respect.

(1) APOLOGIES FOR ABSENCE: apologies were received from Mr M.V. Fletcher, Dr S.L. Jury, Mr D.G. Long, Dr C.J. Miles, Mrs J.A. Paton and Mr A.V. Smith.

(2) MINUTES: The minutes of the last A.G.M., Liverpool, 1988 were approved and signed as correct.

(3) MATTERS ARISING: None.

(4) OFFICERS' REPORTS for 1988: All had been published in Bulletin 54 but further comments were as follows.

(b) Treasurer: The balance sheets for 1988, prepared by Mr B.J. O'Shea, were circulated during the meeting.

(f) Curator: Mr A.R. Perry announced that the vice-comital list of hepatics in BBSUK had now been updated and would be sent to those who had requested copies.

(h) Librarian: Dr K.J. Adams reported that there had been a number of mailbag thefts in his area, so that orders may not have reached him. Members were urged to write again if they had been waiting a long time for orders. He was, however, still awaiting a delayed delivery of stock from Blackwell's.

There were no further comments or questions and the reports were accepted. The

President wished to take the opportunity, endorsed by others, to thank the officers for putting in a great deal of work to keep things ticking over.

(5) REPORT FROM COUNCIL:

(a) Wallace Memorial Reserve: Mr R.C. Stern in continuing negotiations will try to secure the purchase of the proposed site on Sussex sandstone. Failing that, he will refer back to the working party which was set up to establish a worthy memorial.

(b) Publicity: Council has plans to advertise the Society more widely and to introduce more in the way of additional education through meetings and publications.

(c) Atlas: Volume 1 on hepatics will go to press at the end of December this year and will be followed at annual intervals by volumes 2 and 3 on mosses. The price will be £25, hopefully reduced to £20 per volume by subsidy, and offered to members and others at a pre-publication price of £15 per volume, at today's prices.

(d) Further Recording: Details are being discussed to decide how best the Society's recording activities might continue.

(e) Bulletin: Mr A.R. Perry in conjunction with others who wish to help, is looking at possible ways of expanding the scope of the Bulletin.

(f) Archivist: The Society possesses archival material which is valuable both bryologically and historically. To preserve it and increase its usefulness, Council would like to appoint an archivist to curate and catalogue the material. Members' suggestions about how to care for the papers, notebooks and photographs would be appreciated and a volunteer archivist would be welcomed. Dr M.R.D. Seaward kindly offered to care for the photographs, which it was hoped would be taken to AGMs for naming by members. Dr Seaward enquired what the position was concerning the Bryohistorical Project, which it was understood Dr S.W. Greene had nearly completed at the time of his death. Dr Greene's widow, it was reported by Dr R.E. Longton, was keen to ensure the completion of the work and Dr Longton undertook to look into the matter further.

(g) Membership subscription: Council wished to propose an increase in the subscription from £10 to £15 with effect from January 1991. Mr M.F.V. Corley observed that eight years had elapsed since the last increase and several members spoke to the effect that an increase was now due. It was agreed that the proposal be put to the next AGM.

(h) Sweatshirts: Dr S.R. Edwards is organizing the production of cream sweatshirts bearing the B.B.S. logo in green and brown. It is hoped they will be available for sale by next spring.

(6) TENURE OF OFFICERS: It was proposed by Dr M.O. Hill and had been ratified by Council that, with the exception of the Curator and Librarian, Officers of the B.B.S. shall have a normal limit of tenure of 10 years. Officers who have served for 10 years or more can be re-elected, but only if proposed from the Chair and seconded by the Vice-President or an ex-President. For the purposes of this resolution, officers already serving in 1989 shall be deemed to begin their period of office on 1 January 1990. Thus the rule will have no effect until the year 2000. The proposal was accepted unanimously.

(7) ELECTION OF OFFICERS: The President reported that at a meeting of Council the previous evening the Treasurer felt he had to resign. Council had looked round quickly and agreed to propose that Dr G.C.S. Clarke should serve as acting Treasurer until such time as he could be nominated for election at the next AGM. Details of other Council changes for 1990 had been circulated in the Bulletin, the President noting that he himself would be succeeded by Dr M.O. Hill. Dr G.C.S. Clarke (Bibliographer) and Dr S.L. Jury (Membership Secretary) wished to retire and the terms of all other officers except the General Secretary and Meetings Secretary expire. It was reported that Council had nominated Prof. J.G. Duckett for election as Vice-President, Mr L.T. Ellis as Bibliographer and Mr A.V. Smith as Membership Secretary. Other officers were willing to continue and had also been nominated by Council. In the absence of other nominations they were declared elected.

(8) ELECTION OF ELECTED MEMBERS OF COUNCIL: It was reported that Council had nominated Mrs K.M. Cocking, Mr C.C. Townsend and Mr M.M. Yeo for election in place of Dr C.J. Miles, Dr P.H. Pitkin and Mrs V. Williams, who were retiring. They were declared elected in the absence of other nominations. The President expressed his thanks to all retiring Officers and to the three retiring Elected Members for having added considerably to discussions at Council meetings.

(9) MEMBERSHIP SUBSCRIPTIONS AND MODE OF PAYMENT: Subscriptions had been dealt with earlier, and proposals concerning payment were deferred.

(10) PLACE AND DATE OF NEXT ANNUAL GENERAL MEETING: Dr P.J. Lightowlers announced that this would be on September 22nd, 1990, at 4.30pm in the Pathology Department, University of Cambridge.

(11) OTHER FUTURE MEETINGS, INCLUDING POLICY ON TIMING OF FIELD MEETINGS: Dr P.J. Lightowlers confirmed advertized details of the Bryophyte Workshop, 1989, Spring Meeting, 1990, and Summer Meeting 1990. His plans for later dates were as follows:

Paper-reading 1990, Cambridge, 22-23 September, with Dr P.E. Stanley as local secretary. Accommodation had been reserved in Downing College. The meeting is intended to honour two senior members, Professor P.W. Richards and Dr E.W. Jones, and will have a tropical flavour.

Bryophyte Workshop 1990, Manchester, 10 November, with Dr S.R. Edwards as local secretary. Photographic techniques will be demonstrated by Dr Edwards, Dr M.C.F. Proctor and Dr H.L.K. Whitehouse.

Spring 1991. Suggestions were requested. Those received to date included north or central Wales, Lincolnshire, N.E. Yorkshire and Dorset.

Summer 1991. Dr Lightowlers reported that Mr A.R. Perry had offered to lead a meeting, in collaboration with Monsieur R.B. Pierrot, in the Central Massif of France. Dates were discussed in the context of a joint meeting of the International Association of Bryologists and the B.B.S. in Britain during July. Some members would wish to attend both. Dr Lightowlers undertook to liaise with the I.A.B. and with Mr Perry, who was willing to look into the possibility of arranging the French meeting to avoid a clash with the I.A.B. meeting.

Plans were also afoot to organize more local meetings for recording, and Dr Lightowlers asked for volunteers to help in setting up a local network. Dr P.E. Stanley expressed the opinion that field meetings might be more conveniently timed to run from Saturday to Saturday rather than the present practice of Wednesday to Wednesday, on the grounds that they would not then

break into two or three working weeks. Some members spoke in favour of a Wednesday start in view of cheaper mid-week fares and of the opportunity to attend just for the weekend part of a meeting. A vote showed that 16 were in favour of a midweek start, whereas 3 would prefer a Saturday start.

(12) ANY OTHER BUSINESS:

(a) Special Volumes Series: Miss J.M. Ide announced that a scheme had been set up six or seven years ago to produce handbooks for non-members, the general public and enthusiastic beginners as well as members. The first, "A Practical Guide to Bryophyte Chromosomes", was now available for sale at £2.50 + 50p p+p. A volume on collecting tropical bryophytes will be ready by the end of the year and another, a practical guide for beginners, was being planned. Miss Ide asked members to submit to her any details they have found helpful in dealing with bryophytes. Mr Perry requested the preparation of an advertizing notice about these booklets for insertion in the Bulletin. The President thanked Miss Ide for her capable and enthusiastic help in publishing this series, appreciation that was endorsed by others.

(b) Obituaries: Mr A.R. Perry asked what arrangements had been made for the preparation of obituaries. Dr M.E. Newton reported that Council had agreed that the Secretary should be responsible for co-ordinating arrangements in conjunction with the Editor of the Journal. Dr A.J.E. Smith, as Editor, reserved the right to decide which obituaries should be published in the J. Bryol. Mr F.H. Brightman and Dr D.H. Brown said this was similar to the arrangements made by the British Lichen Society. Several members felt, however, that all obituaries should go in the Journal. Their length would vary and Dr S.R. Edwards considered this would avoid the divisive nature of publishing some in the Journal and others in the Bulletin. Dr R.E. Longton drew attention to the cost of producing the Journal and thought that members and subscribers were concerned to receive value for money in what was published. Discussion resulted in no decision being reached.

(c) Dr Lightowlers reported that the B.B.S. travelling exhibit, "A Secret Garden", would be at Liverpool Museum between March and June next year. The Museums intended to run a one day course for beginners during that time and needed one or two tutors.

(d) In reply to a question from Mr M.F.V. Corley, Mr C.D. Preston reported that preparation of the proposed new mapping card had been postponed. It had been thought that this would allow a more rational choice of species after the preparation of draft maps from existing data. It was now possible to proceed.

(e) Mr A.R. Perry announced that Dr A.J.E. Smith's new liverwort flora was now in proof.

There being no other business, the meeting adjourned at 6.02pm.

M.E. Newton, Hon. General Secretary
September, 1989

ELECTION OF OFFICERS AND ELECTED MEMBERS OF COUNCIL

The terms of office of Dr M.E. Newton (General Secretary) and Dr P.J. Lightowlers (Meetings Secretary) expire at the end of 1990. Both are eligible for re-election. Also eligible for election to the posts in which they are currently serving in an acting capacity are Dr G.C.S. Clarke (Acting Treasurer) and Dr J.W. Bates (Acting Recording Secretary). The latter is a new office,

which Council proposes should replace that held by Dr A.J.E. Smith (Mapping Secretary), who wishes to retire. The three Elected Members of Council who retire at the end of 1990, Dr D.H. Brown, Mr M.V. Fletcher and Mrs J.A. Paton, are not eligible for re-election until two years have elapsed. Members are invited to submit nominations for Officers and Elected Members, sending them, in an envelope marked PRIVATE, to the General Secretary, Dr M.E. Newton, Department of Botany, Liverpool Museum, William Brown St., Liverpool, L3 8EN, to arrive no later than 25 August 1990. A nomination must not be made without the consent of the person it is wished to nominate. If elections are needed, they will be held at the AGM in the Pathology Department, University of Cambridge, on 22 September 1990.

PROPOSED SUBSCRIPTION INCREASES

It is a tribute to the state of the Society's finances to be able to remind members that subscriptions have remained at their current level since 1981. Having said that, it will come as no surprise to hear that we are not immune from the financial realities of the world and that inflation has now caught up with us. For the last two years the Society's expenses have exceeded its income and we have now arrived at the point where our reserves will be depleted at an accelerated rate unless we take action.

Council has therefore reached the conclusion that we can no longer afford to delay an increase in the subscriptions. Members will be asked to vote at the AGM in Cambridge for an ordinary membership subscription of £15.00 and a junior membership subscription of £7.50. The family membership rate will be retained at £1.00.

Despite these increases, membership of the Society is excellent value for money. With two issues of the Journal per year and two issues of the Bulletin as well as participation in all the varied activities the Society organizes our subscriptions are far from expensive. In addition, we have been playing an increasingly prominent role within the scientific community to ensure that bryophytes are given proper consideration when issues such as conservation are at stake. Your subscription, therefore, benefits not only you, but bryology as a whole.

Giles Clarke

FUTURE MEETINGS OF THE SOCIETY

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

ANNUAL GENERAL MEETING AND SYMPOSIUM MEETING, 1990, Cambridge, 21-23 September.

Local Secretary: Dr Philip Stanley, 48 Glisson Road, Cambridge, CB1 2HF. Tel. 0223 460888.

This will be a special meeting in honour of Professor Paul Richards and Dr Eustace Jones, two of our most longstanding active members. Accommodation and meals will be in Downing College and lectures and the AGM will be held in the nearby University Pathology department.

The meeting will follow the conventional pattern of a symposium on the Saturday (starting at around 9.00 am) followed by the AGM, and a field meeting on the Sunday. As usual, there will be a Council meeting on the Friday evening, while on Saturday there will be a special symposium session on tropical bryology and

in the evening a celebratory meal to mark the occasion.

All those wishing to attend are asked to contact the local secretary as soon as possible and **before 1 September**. Accommodation in the College is limited and will be allocated on a first come first served basis.

The choice of speakers this year reflects the wide and varied interests of Professor Richards and Dr Jones - there will be a strong emphasis on tropical bryology - but other aspects, including the flora of places nearer to home, have not been forgotten. Speakers will include:

Prof. Paul Richards (Cambridge): First steps in tropical bryology.

Dr Eustace Jones (Kirtlington, Oxford): Title to be announced.

Dr Rob Gradstein (Institute of Systematic Botany, Utrecht): A view at the liverwort flora of tropical America.

Dr Jeff Bates (Imperial College, Ascot): Studies of Berkshire's mosses and hepatics.

Dr Alan Harrington (Natural History Museum, London): The bryological exploration of West Africa.

Mr Miguel Equihua Zamora (University of York): Campylopus introflexus on the North York Moors.

The ANNUAL GENERAL MEETING will be held at 4.30 pm on Saturday 22 September, 1990, at the University's Pathology Department, Tennis Court Road, Cambridge, following the paper readings.

ANNUAL GENERAL MEETING, CAMBRIDGE, 1990

A G E N D A

1. Apologies for absence
2. Minutes of the last AGM, Lincoln, 1989 (see pp. 11-14 of this Bulletin).
3. Matters arising
4. Officers' reports for 1989 (see pp. 2-11 of this Bulletin).
 - a) General Secretary
 - b) Treasurer
 - c) Bibliographer
 - d) Bulletin Editor
 - e) Conservation Officer
 - f) Curator
 - g) Journal Editor
 - h) Librarian
 - i) Mapping Secretary
 - j) Meetings Secretary
 - k) Membership Secretary
 - l) Publicity Officer
 - m) Reading Circle Secretary
 - n) Recorder for Hepatics
 - o) Recorder for Mosses
5. Report from Council
6. Election of Officers (see pp. 14-15 of this Bulletin)
 - a) General Secretary
 - b) Treasurer
 - c) Meetings Secretary
 - d) Recording Secretary
7. Election of Elected Members of Council (see pp. 14-15 of this Bulletin)
8. Membership subscriptions (see pp. 15 of this Bulletin)
9. Place and date of next Annual General Meeting
10. Other future meetings
11. Any other business

WEEKEND WORKSHOP ON BRYOPHYTE PHOTOGRAPHY, 1990, Manchester, 9-11 November.

Local Secretary: Dr Sean R. Edwards, Manchester Museum, Manchester University,
Oxford Road, Manchester, M13 9PL. Tel. 061-275 2671.

Tutors: Dr Harold Whitehouse, Dr Michael Proctor.

The main purpose of this workshop is to instruct members on the best ways of using their own equipment to record bryophytes photographically. Stress will naturally fall on using the camera to record or collect bryophytes, although we shall also try to make the results attractive. We will show what can be done with the most basic of equipment, through to the advantages (if any) of spending a king's ransom.

Basic requirements consist of a single lens reflex camera with manual control and some means of focussing close-up, preferably to life size or more; extension tubes and a standard lens are quite sufficient, although an electronic flash gun and some means of using it detached from the camera would be most useful. If any prospective participants are unsure of what might be required, please contact the local secretary (home tel: 061-442 9346) or Dr Proctor (tel. 036 37468 evenings) in advance, rather than buy unwisely or turn up with some vital piece of equipment missing.

Provisional programme: Friday evening - introductory session for those who can make it; Saturday - close up, macro and microscope photography: Sunday - field day (weather permitting). We are also most privileged to present the unique experience of Dr Whitehouse's spectacular stereoscopic bryophyte photography, both as a slide show and as demonstrations with a stereo viewer. He will talk on taking stereophotographs with a simple home made jig, as well as with his latest "Baby Bertha IV" made by his late wife Pat.

This workshop is likely to be popular and numbers must be limited, so please do not leave it too late to book. Write to the local secretary for details and application forms, which are now available. Applicants will be sent information on accommodation.

SPRING FIELD MEETING, 1991, Clevedon, 3-10 April.

Local Secretary: Mr Peter Martin, 37 Hughenden Road, Horfield, Bristol, BS7 8SF
Tel. 0272 240355.

This meeting will be based at Clevedon which will give access to a variety of habitats in North Somerset (VC 6). Places to be visited include sites in the Mendips on limestone where such species as Gymnostomum viridulum, Grimmia orbicularis, Phascum curvicolle, Bryum canariense and Pleurochaete squarrosa occur. Other sites include old lead workings where Ditrichum plumbicola and Grimmia donniana are recorded. The Somerset levels and coastal habitats will be included where Pallavicinia lyellii and Cololejeunea minutissima are possible finds.

A programme will be available from the local secretary in the new year.

IAB/BBS INTERNATIONAL SYMPOSIUM ON THE BIOLOGY OF SPHAGNUM, 1991, Exeter, 12-18 July

Organisers: Dr R.E. Daniels, Institute of Terrestrial Ecology, Furzebrook
Research Station, Wareham, Dorset, BH20 5AS. Tel. 09295 51087.
Dr R.E. Longton, Department of Botany, Plant Science Laboratories,
University of Reading, Whiteknights, Reading, RG6 2AS.

This meeting will begin with a five day field excursion (12-16 July) starting in Glasgow and terminating in Exeter, where the symposium meeting will be held. The excursion will concentrate on Sphagnum and visit a range of peatland types, including many classic sites. The approximate cost will be around £220, including transport, accommodation and food.

The International Symposium on the Biology of Sphagnum will be held at the University of Exeter from July 17-18, and will bring together diverse aspects of the biology of this economically important group. There will be eight sessions, each with an invited speaker(s):

Taxonomy and systematics: R.E. Andrus. **Biogeography:** A. Eddy, D. Lane. **Population genetics:** R.E. Daniels, C.P. McQueen. **Physiology:** H. Rudolph. **Ecophysiology:** J.M. Glime, J.A. Lee. **Ecology:** K. Dierssen, H. Rydin. **Peat-forming systems:** J.A.P. Janssens, N. Malmer. **Sphagnum and man:** P. Pakarinen. There will also be special contributions from R.S. Clymo and H. Sjörs.

For further details of accommodation and registration, see below under the IAB biennial experimental bryology meeting.

IAB BIENNIAL MEETING - EXPERIMENTAL BRYOLOGY, organised jointly with the BBS, Exeter, July 19-24, 1991.

Organisers: Dr M.C.F. Proctor, Hatherly Laboratories, The University, Prince of Wales Road, Exeter, EX4 4PS.

Dr R.E. Longton, Department of Botany, Plant Science Laboratories, University of Reading, Whiteknights, Reading. RG6 2AS.

This meeting will cover the major advances achieved in recent years in many areas of experimental bryology, and attempt to explore the interrelationships between results from many areas of study. The topics, each of which have an invited keynote speaker, are as follows:

Biochemistry and metabolism, fine structure, reproduction and control of development, environmental physiology and experimental ecology, pollution and conservation and biosystematics and populations.

There will also be two one-day field excursions to sites of bryological interest in the area.

Accommodation, registration and booking: Accommodation for this meeting and the Sphagnum symposium will be provided in residence halls at the University of Exeter. Dinner, bed and breakfast will be approximately £27.50 per day.

Registration fees are as follows:- Sphagnum symposium: £15. Experimental bryology meeting: £25. Both meetings: £35.

Anyone wishing to attend either of these meetings, or who wishes to submit a paper, is asked to contact Dr Royce Longton as soon as possible, and not later than October 1, 1990.

SUMMER FIELD MEETING, 1991, Massif Central, France.

Local Secretary: Mr Roy Perry, Department of Botany, National Museum of Wales, Cardiff CF1 3NP. Tel. (0222) 397951 Ext. 267.

M. Pierrot has kindly agreed to collaborate in arranging this meeting which will probably be based on Besse-en-Chandesse. The dates are not yet fixed but the meeting will probably be arranged during the third week of August.

ANNUAL GENERAL MEETING AND SYMPOSIUM MEETING, 1991, Sheffield, 14-15 September.

Local Secretary: Mr Tom Blockeel, 9 Ashfurlong Close, Dore, Sheffield, S17 3NN
Tel. (0742) 366861.

Both lectures and accommodation are being arranged in the University of Sheffield's Tapton Hall, adjacent to the Department of Animal and Plant Sciences' Experimental Garden.

BRYOPHYTE WORKSHOP, 1991, Rogate, West Sussex, 11-13 October.

Local Secretary: Dr June Chatfield, 44 Ashdell Road, Alton, Hampshire, GU34 2TA. Tel. (0420) 82214.

Tutors: Alan Crundwell, Francis Rose and Rod Stern.

This weekend workshop, which is designed for beginners and intermediates, will be held at Rogate Field Centre, near Petersfield. The centre belongs to King's College, University of London, and is set in good downland countryside. Full microscope facilities, a well equipped laboratory and comfortable accommodation will all be laid on at a very reasonable cost.

FURTHER MEETINGS. Your suggestions on our future programme are greatly welcomed, and will help provide the society with the kind of varied and successful meetings we have enjoyed in the past. For 1992 we are planning to return to Scotland for our main summer meeting, which we last visited in 1988. New ideas for the spring, AGM and Workshop meetings are particularly welcome, and remember there is always room in the programme for local field meetings.

Don't delay - write or phone with your ideas:

Philip Lightowlers, 38a, Lockhurst Street, London E5 OAP. Tel. (081) 985 7810.

OTHER BRYOLOGICAL MEETINGS

12-19 August, 1990: Congress on East Asiatic Bryology, Helsinki.

Details from Timo Koponen, Department of Botany, University of Helsinki, Unioninkatu 44, SF-00170 Helsinki, Finland.

18-25 August, 1990: Mosses and Liverworts. Dr M.E. Newton, Kindrogan Field Centre, Enochdu, Blairgowrie, Perthshire, PH10 7PG

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

25 August-1 September, 1990: Bryophytes. Mr Brian Brookes, Highland Field Studies, Borelick, Trochry, Dunkeld, Perthshire, PH8 OBX

Details from Mr Brookes at the above address.

31 August-7 September, 1990: Mosses and Liverworts. Dr M.E. Newton, Preston Montford Field Centre, Montford Bridge, Shrewsbury, SY4 1DX

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

7-14 September, 1990: Mosses and Liverworts. Dr M.E. Newton, Malham Tarn Field Centre, Settle, North Yorkshire, BD24 9PU

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

24-28 September, 1990: Endangered Bryophytes in Europe - Causes and Conservation, Uppsala. Details from Tomas Hallingback, Swedish University of Agricultural Sciences, Department of Ecology and Environmental Research, P.O. Box 7072, S-750 07 Uppsala, Sweden.

27 October, 1990 and 10 November 1990: Mosses Through Handlens and Microscope. Dr Martha Newton and Miss Heike Hofmann. To be held at the Liverpool Museum, William Brown Street, Liverpool, L3 8EN.

Further details from Miss Hofmann at the above address, or phone 051-207-0001, ext. 209.

FUTURE RECORDING ACTIVITIES OF THE BBS

With the imminent publication of the Atlas a long era of field recording, of central importance in the Society's affairs, would seem to have ended. Tony Smith, who has guided the mapping scheme to fruition since its inception, has indicated his wish to retire as BBS Mapping Secretary. To consider the options for future recording activities Council appointed a working party chaired by Rod Stern and including Ken Adams, Chris Preston and myself. The recommendations of the working party have now been broadly approved by Council and are summarised below.

Most importantly, it has been decided that the BBS should continue the recording of bryophytes within 10 km squares in Britain and Ireland after publication of the Atlas. Reasons for this include, firstly, the need to fill in gaps which will be apparent as the Atlas volumes appear. Secondly, it is important that the distributions of our bryophytes are reviewed at intervals. Without this it will be difficult to assess the impacts on the flora of phenomena such as climatic change, falling atmospheric pollution levels or changing land use. Lastly, there is still a great need by conservationists to identify sites of bryological interest. Arguably, this is best collected within the auspices of a national recording scheme. The Biological Records Centre has agreed to continue to handle the Society's records and update the recently computerized data bank at intervals of about 2 years. The possibility exists, therefore, to produce updated editions of the Atlas or other products which utilize the data base.

In future mapping and other recording activities of the BBS will be the responsibility of a Recording Secretary aided and abetted by a small Recording (sub)Committee. Another new feature is the introduction of a network of Regional Recorders who will each oversee a particular vice county or other region. Completed cards should now be submitted to the Regional Recorder in whose territory the records were made. It is hoped that the Regional Recorders will also forge links with conservation bodies in their area and generally promote bryophyte recording, for instance by encouraging new members, organising excursions or even by attempting a local flora. A list of Regional Recorders will be advertised as soon as possible, in the meantime completed record cards should be sent to me.

At its inaugural meeting in May the Recording Committee elect discussed a number of other matters including the production of a new recording card, improved materials for site recording and the possibility of running Special Projects to examine particular problems relating to bryophyte distributions. Also, to air your news and views on recording issues, we would like to start a 'Recording Newsletter' column in the Bulletin. I welcome suitable items for inclusion relating to any aspect of bryophyte recording.

Dr Jeff Bates
Acting Recording Secretary

REFEREES (July, 1990)

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

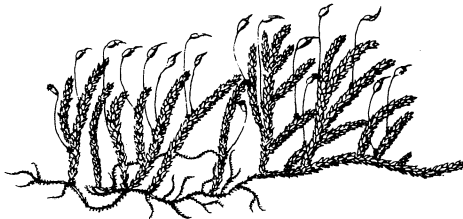
GENERAL REFEREE: H.W. Matcham, 21 Temple Bar, Strettington, nr. Chichester, W. Sussex, PO18 0LB

HEPATIC REFEREES:

- 1,2,11,12,38,53-55,58,64-67,69: D.G. Long, Royal Botanic Garden, Edinburgh EH3 5LR
3-10,18-24: Dr M.E. Newton, Dept. of Botany, Liverpool Museum, William Brown Street, Liverpool, L3 8TN (All mail to be marked 'Confidential')
13-17, 36,37,39-44: G.P. Rothero, Benmore Centre, by Dunoon, Argyll
25-35,45-47: M.F.V. Corley, Pucketty Farm Cottage, Faringdon, Oxfordshire, SN7 8JP
48-52, 78-86: M.J. Wigginton, Nature Conservancy Council, 70 Castlegate, Grantham, Lincolnshire, NG 31 6SH
56,57,59-63,68,70-74: T.L. Blackstock, Nature Conservancy Council, Ffordd Penrhos, Bangor, 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, British Museum (Natural History), 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 Plant Biology, University College of North Wales, Bangor, Gwynedd, LL57 2UW
39,67-81,96-104: M. Yeo, 49 Arlesey Road, Ickleford, Hitchin, Herts., SG5 3TG
40-61: Dr D.F. Chamberlain, Department 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, Dept of Botany, National Museum of Wales, Cardiff, CF1 3NP
106-138: M.J. Wigginton (address above)
139-142,144-175: A.C. Smith, End House, 24 Shelfanger Road, Diss, Norfolk, IP22 3EH



B.B.S. LIBRARY SALES AND SERVICE 1990

FOR LOAN:

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

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

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

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

FOR SALE:

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

Transactions of the British Bryological Society/Journal of Bryology:

Vol. 1	parts 1-5 (£2.40 each)	£12
Vol. 2	parts 1 (£3.00) parts 2-4 out of print	
Vols. 3 & 4	parts 1-5 (£2.40 each)	£12 per vol.
Vol. 5	parts 1-4 (£3.00 each)	£12
Vol. 6	parts 1-2 (£6.00 each)	£12 - ends the series of Transactions.
Vols. 7-9	parts 1-4 (£5.00 each)	£20 per vol.- renamed <u>J. of Bryology</u> .
Vol. 10	parts 1-4 (£8.00 each)	£32
Vol. 11	parts 1-4 (£10.00 each)	£40
Vol. 12	parts 1-4 (£11.50 each)	£46
Vol. 13	parts 1-4 (£15.50 each)	£62
Vol. 14	parts 1-4 (£18.00 each)	£72
Vol. 15	parts 1-4 (£22.50 each)	£90
Vol. 16	part 1 (£27.50)	

Census Catalogues:

Duncan, J.B.	Census Catalogue of British Mosses, 2nd edition	1926	(20p)
Sherrin, W.R.	Census Catalogue of British Sphagna	1946	(20p)
Paton, J.A.	Census Catalogue of British Hepatics, 4th edition	1966	(20p)
Warburg, E.F.	Census Catalogue of British Mosses, 3rd edition	1963	(20p)
Corley, M.F.V.	Distribution of Bryophytes in the British Isles	1981	
& Hill, M.O.	(A Census Catalogue of their Occurrence in Vice-Counties)		
	Price incl. P & P Non-members (£6), Trade (£4), Members (£5.00)		

Other Items:

Longton, R.E. & Perry, A.R.	Proceedings of Jubilee Meeting, 1983. 1985	(£6.00)
Grolle, R.	Hepatics of Europe and the Azores. An Annotated List of Species with Synonyms. Price including P & P.	1983 (£2.50)
Pearman, M.A.	A Short German-English Bryological Glossary.	1979 (50p)
Newton, M.E.	A Practical Guide to Bryophyte Chromosomes.	1989 (£2.50)
Evans, D.E. & Perry, A.R.	Moss Wall Chart. Price including P & P.	1987 (£2.80)
Newton, M.E. et al.	Bryology: modern research and the ways forward.	1988 (£5.50)

BBS Tie, Claret with BBS logo	(£4.95)
Swift x20 Handlens and Leather Case	(£9.00)
Idealteck No. 3 Stainless Steel Forceps	(£4.50)

PLEASE DO NOT INCLUDE CASH WITH U.K. ORDERS. CUSTOMERS WILL BE INVOICED FOR THE CORRECT AMOUNT INCLUDING P & P. (POSTAGE & PACKING EXTRA UNLESS STATED). ADDRESS LABELS LEGIBLY PRINTED APPRECIATED.

All the above items are available from the BBS Librarian:

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

NEW VICE-COUNTY RECORDS AND AMENDMENTS TO THE CENSUS CATALOGUES

Records now include the 10km square for each locality, when known. All undated records are based on specimens collected in 1989; for specimens collected in earlier years the year of collection is given before the collector's name. Where the specimen bears a collector's number, this is given after the collector's name. All specimens are deposited in BBSUK, except where otherwise indicated. Numbers and nomenclature follow Corley & Hill (1981), Distribution of bryophytes in the British Isles: a census catalogue of their occurrence in vice-counties.

HEPATICAE

D.G.LONG

- 1.1 Anthoceros agrestis, delete 29, the record (Trans. B.B.S. 4:18 (1956)) is unlocalised, comm. Yeo; delete 33, locality of voucher (Newent District, 1931, H.H. Knight, D.A. Jones & W.E. Nicholson) is in 34, comm. Yeo.
- 1.2 A. punctatus, delete 58, the record (Trans. B.B.S. 4:491 (1963)) is unlocalised, comm. Yeo.
- 2.1 Phaeoceros laevis a. ssp. laevis, delete 33 and 42, no records or vouchers traced, comm. Yeo.
- 5.1 Reboulia hemisphaerica, delete 46, no record or voucher traced, comm. Yeo.
- 6.1 Conocephalum conicum, delete H15, no record or voucher traced, comm. Yeo; no record for H19 traced, comm. Yeo; replace by: bank in woods at St. Catherine's, Leixlip (H19), 1968, A.L.K. King (DBN), comm. Synnott.
- 9.2 Marchantia alpestris, on compacted soil between paving slabs, c 50m, St. Catherine's College, Oxford 42/50 (23), Porley; between pavement slabs, University Campus, Aberystwyth 22/58 (46), Paton 7129; on path in churchyard, Kirkham 34/43 (60), 1986, Wigginton.
- 11.1 Ricciocarpus natans, Wicklow (H20) in (), pre-1874, W. Archer (BM), comm. Preston.
- 12.3 Riccia huebeneriana, on dried mud at side of reservoir, 250m, Lake Vyrnwy, 23/92 (47), Hodgetts 1844.
- 12.4 R. fluitans, delete H8, record inadequately localised and no voucher traced; delete H32, no record or voucher traced, comm. Yeo.
- 12.5 R. rhenana, on bare mud in a cattle-grazed area of willow swamp, Grimley Marsh N of Worcester 32/85 (37), J. & P. Day.
- 12.8 R. subbifurca Crozals. British and Irish records of R. warnstorffii are renamed as R. subbifurca, but delete 10 and H40 (Paton, 1990); the following are additional records: rocks near Glaslyn River (48), 1917, D.A. Jones (MANCH) det. Paton; damp soil by burn, 190m alt., Well Cleugh Burn 36/75 (81), Long 16106, (E), det. Paton; earthy bank below cliffs, Creag-an-Lochain (88), 1968, Paton (herb. Paton); shaded sandy loamy soil beside footpath, Moniack Glen, Beaully (96), 1988, van Melick 881186, det. Jovet-Ast; marshy field near Owenbeg River E of Abbeyleix (H14), 1966, Paton & G.C.G. Argent 3172-b.
- 12.11 R. beyrichiana, delete H23, record is unlocalised, comm. Yeo.
- 13.1 Metzgeria fruticulosa, on elder in wood, 2km E of Molesworth 52/07 (31), Hill; on trunk of Sambucus nigra at margin of scrub near farm, near Aberaeron, Esgair-Arth 22/46 (46), Orange 7718; existing record for 81 (on Sambucus, Whitadder River nr Twisle Bridge, 1963, M. Dalby,) is ambiguous as Twisel Bridge is in 68 but R. Whitadder is in 81; replace by: on Elders, Greenfield Plantation, Mordington 36/95 (81), 1956, J.B. Duncan (E); abundant on old Sambucus nigra, garden of Kergord, Weisdale, Mainland, Shetland 4N1/35 (112), Wigginton; locality of existing record for H2 (Ventry, 1894, D. McArdle (DBN)) is in H1; replace by: Ross

- Island, Killarney (H2), 1983, Synnott (DBN), comm. Synnott & Yeo; record for H30 is unlocalised, comm. Yeo; replace by: on willow by stream, NE slope of Slievenakilla, NE of Ballinagleragh (H30), 1969, Paton (NMW).
- 13.3. M. furcata, no record for H17 traced, comm. Yeo; replace by: oak wood, Clonbrock, (H17), 1896, D. McArdle (DBN), comm. Synnott; no record for H18 traced, comm. Yeo; replace by: copse by road near Black Bull, Sharavogue (H18), 1949, A.P. Fanning (DBN), comm. Synnott.
- 13.4. M. conjugata, no record for 40 traced, comm. Yeo; replace by: Long Mynd, 32/49 (40), 1906, J.B. Duncan (E), and: Fastings Coppice, Arley (40), 1908, J.B. Duncan.
- 15.1. Aneura pinguis, on damp sand at edge of pool, 10m, Swanholme Lakes, Lincoln 43/96 (53), Blockeel 18/465.
- 17.1. Riccardia multifida, in hollow in turf on calcareous knoll, facing north, Knocking Hoe 52/13 (30), 1955, D. Swinscow.
- 17.3. R. incurvata, on damp sand at edge of pool, 10m alt., Swanholme Lakes, Lincoln 43/96 (53), Blockeel 18/464.
- 17.4. R. palmata, on rotten log on shaded steep E bank of Kinnell Water below St Ann's 35/09 (72), Corner; delete H18, voucher specimen (Geashill, 1897, C.D. Russell (DBN)) is R. latifrons.
- 18.1. Pellia epiphylla, no record traced for H17, comm. Yeo; replace by: Doon Bog, Clonbrock (H17), 1896, D. McArdle (DBN), comm. Synnott; no record traced for H18, comm. Yeo; replace by: Geashill (H18), 1890, C.D. Russell & H.W. Lett (DBN), comm. Synnott; delete H19, no record or voucher traced, comm. Yeo.
- 19.1. Pallavicinia lyellii, delete H21, no record or voucher traced, comm. Synnott & Yeo.
- 21.1. Blasia pusilla, on dried mud around pool, 18m, Whisby Pits 43/96, (53), Hodgetts 1850.
- 22.1. Fossombronia foveolata, delete 70, no record or voucher traced, comm. Yeo.
- 22.3. F. caespitiformis, delete 16 and 40, no records or vouchers traced, comm. Yeo.
- 22.4. F. husnotii, with Riccia crozalsii, rocks near Monmouth (35) in (), 1877, W. Joshua (MANCH), det. Paton.
- 22.5. F. pusilla a. var. pusilla, no record traced for 33, comm. Yeo; replace by: wood above Dowdeswell Reservoir (33), 1908, H.H. Knight (NMW).
- 22.6. F. wondraczekii, delete 33, no localised record or voucher traced; in damp channel in woodland with Pseudephemerum nitidum, Cowclose Plantation, Copley 45/02 (66), Humphreys; delete 102, record inadequately localised and no voucher traced, comm. Yeo.
- 23.1. Petalophyllum ralfsii, Morfa Bychan 23/53 (49) in (), 1906, S.J. Owen & D.A. Jones (E).
- 26.4. Barbilophozia atlantica, with B. floerkei on acidic rock outcrop in gorge, S side of Afon Conwy, c 5km SW of Ysbyty Ifan, 23/84 (50), 1988, Yeo.
- 26.5. B. attenuata, on stump, Falls of Clyde, Corehouse Nature Reserve 26/84 (77), 1972, B.J. Coppins (E); voucher for record from H1 (Anniscaul Lough, Dingle Peninsula, 1898, H.W. Lett & D. McArdle (DBN)), is indeterminate; replace by: on 'cornice' of humus beneath overhanging Calluna at top of low rock outcrop, 50 ft., rocky knoll on shore of Lough Currane, Waterville, (H1), 1951, Jones 75.
- 26.6. B. hatcheri, delete 93, record unlocalised and no voucher traced, comm. Yeo.
- 26.8. B. barbata, delete 81, 112, H6 and H37, no records or vouchers traced, comm. Yeo.
- 27.1. Anastrepta orcadensis, Huntly's Cave, N of Grantown on Spey (95), 1986, Tidswell; and Culbin Forest (95), 1987, Lusby; delete H6, no record or voucher traced, comm. Yeo.
- 28.1. Lophozia ventricosa a. var. ventricosa, delete 4, 6, 7, 11, 13, 14, 15,

- 16, 17, 18, 20, 26 and 70, no records or vouchers with oil-body data traced, comm. Yeo & Long; on roadside wall, near Llyn Mair, NW of Maentwrog 23/64 (48), Blackstock; on peaty N-facing slope by sea, 30m, Garnish Point V54 (H3), Long 15463; no record for H13 traced, comm. Yeo; replace by: on bank by stream, The Black Banks, Mt Leinster (H13), 1975, Paton; growing through *Sphagnum*, raised bog near Woodford, (H15), 1962, A.J.E. Smith; peaty bank near summit of Ben Bulbin (H28), 1970, Paton 4039; probable voucher for H29 (Glenade, 1875, D. Moore (DBN)) is not determinable to variety; replace by: peaty ground among limestone boulders, Peakadaw, Glenade (H29), 1963, J.W. Fitzgerald & Perry (NMW); on peat, Croaghconnellagh, Tawnawully Mts (H34), 1962, J. Appleyard & E.C. Wallace, det. Paton. b. var. *silvicola*, bank of rocky ravine, 300m, Cat Cleuch, Chapelhope Burn 36/21 (79), 1963, H. Milne-Redhead (E); shady wall at edge of wood, 200m, Steel Plantation near Kyles Hill 36/75 (81), Long 16220.
- 28.2 *L. guttulata*, delete 75, 87, 88 and 112, no records or vouchers traced, comm. Yeo.
- 28.3 *L. wenzelii*, delete 89, no record or voucher traced, comm. Yeo.
- 28.4 *L. sudetica*, in chinks of N-facing granite wall, 335m, Lud Gate, Buckfastleigh 20/66 (3), 1987, Pool; probable voucher for 57 (Gt Shacklow Wood, Ashford, 1898, W.R. Linton (E)), is *Leiocolea alpestris*; replace by: thin soil near base of boulder in block-strewn slope, 400m, Ridge Upper Moor, Westend Valley, Bleaklow, 43/19 (57) Blockeel 18/006; delete H9, no record or voucher traced, comm. Yeo.
- 28.6 *L. excisa* a. var. *excisa*, delete 8 and 100, no localised records or vouchers traced, comm. Yeo; no localised record traced for 33, comm. Yeo; replace by: near Prescott, Nottingham Hill, near Cheltenham (33), 1908, H.H. Knight (NMW).
- 28.10 *L. bicrenata*, no localised record traced for 33, comm. Yeo; replace by: Hamhill near Cheltenham (33), 1910, H.H. Knight (NMW).
- 29.1 *Leiocolea turbinata*, delete H6, no record or voucher traced, comm. Yeo.
- 29.3 *L. heterocolpos*, amongst *Amphidium mougeotii* on crag on N slope of Meall nan Fiasgan near Fascaidale, Ardnamurchan, 17/57 (97), Paton & Long.
- 29.5 *L. bantriensis*, delete 57, no record traced, comm. Yeo; probable vouchers (Millers Dale, 1879, W.H. Pearson (E) and Bressington Rocks, 1900, W.R. Linton (NMW)), are *Leiocolea alpestris*.
- 34.3 *Anastrophyllum joergensenii*, on N-facing rocky slope, 850m, Allt a Lochain Uaine, Garbh Choire 27/99 (92), Rothero & Long, Long 16354 (E).
- 35.1 *Tritomaria exsectiformis*, no record traced for 37, comm. Yeo; replace by: old rifle range, Wyre Forest (37), 1911, J.B. Duncan (E); on bark of oak in Sessile Oak woodland with *Scapania gracilis* and *Lejeunea ulicina*, 125m, Aberllefenni near Machynlleth 23/71 (47), Porley; delete 50, no record or voucher traced, comm. Hill & Yeo; delete 61, H1, H4 and H38, no records or vouchers traced, comm. Yeo.
- 35.3 *T. quinquedentata*, Cox Tor, Dartmoor 20/57 (3), 1905, L.J. Cocks; on limestone boulder in Ash woodland, 175m, Dove Dale near Ilam 43/15 (39), 1988, Blockeel 17/500.
- 37.1 *Mylia taylorii*, delete 40, no record or voucher traced, comm. Yeo; delete 89, the locality of the voucher (Craig Vinean 27/94, March 1900, C. McIntosh (E)), is in 88.
- 37.2 *M. anomala*, delete 26, no record or voucher traced, comm. Yeo; among *Sphagnum* on damp heath, between Brynefail and Llanallgo, 23/48 (52), Yeo, Blackstock and Stevens.
- 38.3 *Jungermannia pumila*, delete H21, probable voucher (Glencullen, 1890, D. McArdle (DBN)) is *J. sphaerocarpa*.
- 38.6 *J. exsertifolia* ssp. *cordifolia*, delete 94, no record or voucher traced, comm. Yeo.
- 38.8 *J. sphaerocarpa*, delete H6, no record or voucher traced, comm. Yeo.
- 39.2 *Nardia scalaris*, delete 8, 53, H17, and H19, no records or vouchers

- traced, comm. Yeo; no record traced for H18, comm. Yeo; replace by: bank under heather, Glendine (H18), 1949, A. P. Fanning (DBN), comm. Synnott.
- 39.3 N. geoscyphus, no record traced for 109, comm. Yeo; replace by: Greystones, Watten 39/25 (109), 1901, D. Lillie (GL).
- 40.1 Marsupella emarginata a. var. emarginata, delete H18, no localised record or voucher traced, comm. Yeo. b. var. aquatica, waterfall, c 500m, near top of eastern gully, Taren Allgwm, 5km W of Dylife 22/89 (47), Bates B2438; no record traced for 86, comm. Yeo; replace by: Rowardennan (86), 1940, J.R. Lee (NMW); delete 106, no localised record or voucher traced, comm. Yeo. c. var. pearsonii, delete 47, no record or voucher traced, comm. Hill & Yeo; delete 92, no record or voucher traced, comm. Yeo.
- 40.3 M. funckii, no record traced for 40, comm. Yeo; replace by: with M. emarginata on rough road above the Red Wood, Clun (40), 1913, J.B. Duncan (E).
- 40.4 M. sparsifolia, in irrigated area of coarse gravel and small stones in area of late snow lie, 1150m, NE of North Top, Beinn a' Bhuid 38/00 (94), Rothero 89/399.
- 40.6 M. boeckii, on wet rocks at base of crags in area of late snow lie, 1100m, W side, Coire an Lochain, Cairngorm 28/90 (96), Rothero 89/473.
- 41.2 Gymnomitrium obtusum, on N-facing rocks at 590m, E ridge of Beinn Bharrain, Arran 16/84 (100), Corner.
- 41.3 G. corallioides, no record for 89 traced, comm. Yeo; replace by: Ben Vraichy [=Vrackie] (89), no date, E.M. Holmes (NMW); record for 108 (Sutherland Mountains, 1830, Greville) is inadequately localised, and no voucher traced, comm. Yeo; replace by: on soft schist rocks in gully at 400m on SW cliffs of Ben Hope, 29/44, (108), 1988, Long & Rothero, Long 15127 (E).
- 46.2 Plagiochila porelloides, delete 93, H19 and H21, no records or vouchers traced, comm. Yeo.
- 46.3 P. asplenoides, on bank by edge of ride, Reydon Wood 62/47 (25), 1988, Strauss.
- 46.4 P. britannica, on bank of ditch in swampy Salix woodland, 75m, Littledean Pond near Ayton 36/96 (81), Long 15486.
- 46.5 P. atlantica, on bank in Quercus petraea woodland, 100m, Ysgubor-y-coed, Cwm Einion, 22/69 (46), Orange 7660.
- 46.7 P. killarniensis, on shaded slightly basic rock outcrop in woodland by stream, near Aberaeron, Afon Arth south of Esgair-Arth 22/46 (46), Orange 7715, and damp crevice in low basic cliff, 340m, by confluence of Afon Diliw and Afon Ystwyth, c 6km ENE of Cwmystwyth 22/87 (46), Bates B2376.
- 49.2 Chiloscyphus pallescens, no record traced for 33, comm. Yeo; replace by: Witcombe Wood 32/91 (33), 1913, H.H. Knight (E, BBSUK); in poor fen with Calliergon giganteum and Rhizomnium pseudopunctatum, 220m, Pickie Moss north of Legerwood 36/54 (81), Long 15587.
- 52.1 Saccogyna viticulosa, delete 40, no record or voucher traced, comm. Yeo; delete 85, the record is based on plants, correctly named, in a mixture with Metzgeria leptoneura, labelled 'Jungermannia pubescens, near Kinross, Oct. 1844, R.M. Stark' (E); both species are extremely unlikely in lowland Fife and are probably a result of mislabelling; the M. leptoneura has already been deleted from 85; delete 89, the locality of the voucher, (Craig Vinean 27/94, March 1901, C. McIntosh (E)) is in 88.
- 54.1 Diplophyllum albicans, delete H19, no record or voucher traced, comm. Yeo.
- 54.3 D. obtusifolium, delete 58, no record or voucher traced, comm. Yeo.
- 55.5 Scapania curta, wood N of Sissinghurst 51/73 (15), 1948, Rose.
- 55.9 S. umbrosa, delete H25, no record or voucher traced, comm. Yeo.
- 55.10 S. nemorosa, delete 58, no record or voucher traced, comm. Yeo.
- 55.12 S. irrigua, Doon Bog, Clonbrock (H17), 1896, D. McArdle (DBN).
- 55.13 S. paludicola, in short Molinia-Carex-Sphagnum flush below a neutral

- meadow, 340m, south of Cnwch in a tributary valley of Afon Elan, south west of Rhayader 22/96 (42), Blackstock & Stevens.
- 55.14 *S. compacta*, delete H32, no record or voucher traced, comm. Yeo.
- 55.15 *S. subalpina*, delete H2, locality (Slieve Mish) may be in H1, and no localised record or voucher traced, comm. Yeo.
- 55.16 *S. undulata*, delete 25, H15, H18 and H19, no records or vouchers traced, comm. Yeo; delete H17, probable voucher (Doon Bog, Clonbrock, 1896, D. McArdle (DBN)) is *S. irrigua*.
- 55.18 *S. paludosa*, in large swelling cushions in flush at base of irrigated block scree in area of late snow lie with *Philonotis fontana*, *Scapania uliginosa* and *Drepanocladus exannulatus* var. *rotae*, 1100m, lower Garbh Uisge Beag, Ben Macdui 28/90 (94), Rothero 89/372.
- 55.20 *S. aspera*, delete H6, no record or voucher traced, comm. Yeo.
- 55.21 *S. gracilis*, record for 40 not traced, comm. Yeo; replace by: Titterston Clee Hill, 32/57 (40), 1906, J.B. Duncan (E); delete 58, no record or voucher traced, comm. Yeo; delete 61, record (woods near Derwent) is inadequately localised and may be in 62, comm. Yeo.
- 55.22 *S. ornithopodioides*, on sheltered E-facing ledges with *Bazzania tricenata* at 650m, W ridge of Beinn Bharrain, Arran 16/84 (100), Corner.
- 57.1 *Odontoschisma sphagni*, delete H21 and H31, no records or vouchers traced, comm. Yeo.
- 57.2 *O. denudatum*, delete H38, no localised record or voucher traced, comm. Yeo.
- 58.1 *Cephalozia elachista*, with *Cephalozia lunulifolia* and *Kurzia pauciflora*, bog on Landford Common, SE of Salisbury, 41/21 (8), Paton 7097.
- 58.3 *C. rubella*, delete 36 and 39, records are based on the same voucher specimen (Sutton Park, 1936, E.W. Jones) which is in 38; no localised record for 37 traced, comm. Yeo; replace by: on *Leucobryum*, near Fish Ponds, Wyre Forest (37), 1920, J.B. Duncan (E).
- 58.7 *C. stellulifera*, on mine waste, 380m, near NW end of Nant-y-moch Reservoir 22/78 (46), Stern, conf. Paton.
- 59.1 *Cephalozia bicuspidata* a. ssp. *bicuspidata*, no record traced for H19, comm. Yeo; replace by: growing in *Campylopus*, Cupidstown Hill (H19), 1957, A.L.K. King (DBN)), comm. Synnott; delete H22, probable voucher (Rossan Bog, 1956, A.L.K. King (DBN)), is *C. connivens* b. ssp. *lammersiana*, delete 65, 70 and H39, no localised records or vouchers traced, comm. Yeo.
- 59.2 *C. connivens*, delete 57, no record or voucher traced, comm. Yeo.
- 59.4 *C. loitlesbergeri*, on *Sphagnum*, NE Bog, Cors Caron, Tregaron 22/66 (46), Paton 7130.
- 59.6 *C. lunulifolia*, Tents Mountain (H30), 1916, W.N. Tetley.
- 59.8 *C. catenulata*, delete 58 and 59, no records or vouchers traced, comm. Yeo.
- 61.1 *Cladopodiella francisci*, no record traced for H1, comm. Yeo; replace by: clay bank by track, Roads, west of Kells (H1), 1983, Synnott (DBN).
- 61.2 *C. fluitans*, delete 16, no record or voucher traced, comm. Yeo.
- 64.1 *Anthelia julacea*, delete 109, no record or voucher traced, comm. Yeo.
- 64.2 *A. juratzkana*, on soil at 660m, N-facing side of Beinn Bharrain, Arran 16/84 (100), Corner.
- 66.1 *Kurzia pauciflora*, delete 37, no record traced, comm. Yeo; probable voucher (Hartlebury Common 32/87 (37), 1911, H.H. Knight & J.B. Duncan (E)) is *K. sylvatica*.
- 66.2 *Kurzia trichoclados*, on peaty rocks on N slope in oak wood, valley N of Llanerch 22/03 (45), 1965, Rose & Dodd; with *K. sylvatica* on peat cutting in NE Bog, Cors Caron, Tregaron 22/66 (46), Paton 7132.
- 66.3 *K. sylvatica*, Hartlebury Common, 32/87 (37), 1911, H.H. Knight & J.B. Duncan (E).
- 67.1 *Lepidozia reptans*, delete H19, no record or voucher traced, comm. Yeo; no

- record for H20 traced, comm. Yeo; replace by: Lough Bray (H20), 1879, D. Moore (DBN), and Glen of The Downs (H20), 1955, A.L.K. King (DBN), comm. Synnott
- 67.3 Lepidozia cupressina, delete H4, the locality (Glenbower Wood, 1908, S.C. Bennis (DBN)), is in H5, comm. Yeo.
- 69.1 Calypogeia neesiana, damp peat in forestry ditch, 380m, source of Harecleugh Burn near Twinlaw 36/65 (81), Long 16288.
- 69.2 C. integristipula, on peaty soil under grit boulder in woodland, 250m, Priddock Wood, Ladybower, 43/28, (57), Blockeel 18/274.
- 70.1 Blepharostoma trichophyllum, record for 40 not traced, comm. Yeo; replace by: Loam Hole Dingle, Coalbrookdale (40), 1913, J.B.Duncan (E).
- 71.1 Trichocolea tomentella, no record traced for 8, comm. Yeo; replace by: Great Bradley Wood 31/74 (8), 1978, J. Appleyard (NMW).
- 72.2 Ptilidium pulcherrimum, on trunk of mature Silver Birch in boggy woodland, Fen Covert, Walberswick (25), Fisk; with other bryophytes on boulder in old wood, Great Wood, Eggleston 45/02 (66), Wharton 578.
- 75.1 Kadula complanata, delete 56, no localised record or voucher traced, comm. Yeo; no record for H18 traced, comm. Yeo; replace by: near Geashill (H18), 1889, C.D. Russell (DBN), comm. Synnott; no record for H38 traced, comm. Yeo; replace by: trees, Tollymore Park (H38), 1884, H.W. Lett (DBN), comm. Synnott.
- 75.2 R. lindenberghiana, delete 40, no record traced, comm. Yeo; probable voucher (rocks, Lightspout, Longmynd, 1910, J. B. Duncan (E)) is sterile and indeterminate, det. Long & Paton.
- 75.4 R. aquilegia, delete 88, the voucher (Ben Lawers, July 1885, J. McAndrew (E)) is R. lindenberghiana.
- 76.1 Pleurozia purpurea, delete H40, no localised record or voucher traced, comm. Yeo.
- 77.1 Porella arboris-vitae, a. var. arboris-vitae, mossy rocks at 250m, N side of St Mary's Loch 36/22 (79), Corner; delete 82, no record traced, comm. Yeo; probable voucher (Balgone, North Berwick 36/58, 1907, J. McAndrew (E)) is P. cordaeana var. cordaeana.
- 77.2 P. obtusata, delete 46, no record or voucher traced, comm. Yeo.
- 77.4 P. cordaeana b. var. simplicior, delete 77, 83, 87 and H38, no localised records or vouchers traced, comm. Yeo; delete 88, voucher specimen (Finlary Woods 27/53, 1900, P. Ewing (NMW)) is var. cordaeana; delete H32, voucher specimen (Castleshaw, 1900, C.H. Waddell (NMW)) is var. cordaeana; delete H39, voucher specimen (Colin Glen, 1898, C.H. Waddell (DBN)), is var. cordaeana.
- 78.2 Frullania tamarisci, no record traced for 33, comm. Yeo; replace by: Witcombe Wood, Birdlip (33), 1908, H.H. Knight (NMW); delete H19, no record or voucher traced, comm. Yeo.
- 78.4 F. fragilifolia, delete H7, no record or voucher traced, comm. Yeo.
- 78.5 F. dilatata, delete 56, no localised record or voucher traced, comm. Yeo; no record for H18 traced, comm. Yeo; replace by: Elm tree in copse at Black Bull, Sharavogue (H18), 1949, A.P. Fanning (DBN), comm. Synnott.
- 83.1 Lejeunea cavifolia, no record traced for H13, comm. Yeo; replace by: on rock by towpath, left bank of R. Barrow above Graiguenamanagh (H13), 1954, A.L.K. King, conf. Paton.
- 83.2 L. lamacerina, delete 112, record unlocalised and no voucher traced, comm. Yeo.
- 83.3 L. patens, on damp sheltered granite boulder by stream, 350m, Widecombe in the Moor 20/77 (3), Pool; delete H13, no localised record or voucher traced, comm. Yeo.
- 85.1 Cololejeunea calcarea, on vertical calcareous cliff in gorge of Afon Mynach above Devil's Bridge, 22/77 (46), Woods.
- 85.2 C. rosettiana, record for 40 not traced, comm. Yeo; replace by: calcareous sandstone rocks, woods near Highley, 32/78 (40), 1913, J.B. Duncan (E).

- 85.3 C. minutissima, delete 8 and 70, no localised records or vouchers traced, comm. Yeo; on fallen Hawthorn by sunken track down to beach, 20m, Wallog 22/58 (46), Bates B2467.

REFERENCE

Paton, J.A. (1990). Riccia subbifurca Warnst. ex Crozals in the British Isles. J. Bryol. 16, 5--8.

Contributors of records, 1989

J.W. Bates, T.H. Blackstock, T.L. Blockeel, R.W.M. Corner, J.J. Day, P. Day, J. Dodd, R.J. Fisk, M.O. Hill, N.G. Hodgetts, B.M. Humphreys, E.W. Jones, P. Lusby, D.G. Long, H. van Melick, A. Orange, J.A. Paton, M. Pool, R.D. Porley, C.D. Preston, F. Rose, G.P. Rothero, R.C. Stern, D.P. Stevens, D. Strauss, D.M. Synnott, R.J. Tidswell, T.S. Wharton, M.J. Wigginton, R.G. Woods, M.M. Yeo.

MUSCI

T.L. BLOCKEEL

- 1.1 Sphagnum imbricatum a ssp. austinii, one single moribund hummock on eroded bog near Llyn Conwy, Migneint 23/74 (49), 1977, Ratcliffe, comm. Hill.
- 1.8 S. girgensohnii, bog around open water, 10 m, Skipwith Common 44/63 (61), Hodgetts 1847.
- 1.12 S. capillifolium, Sleaford Ballast Pit 53/04 (53), Lammiman.
- 1.21 S. contortum, mesotrophic bog, Inverewe 18/88 (105), Fenton, comm. Hill.
- 1.24 S. tenellum, in shallow hollow on peat, Holcroft Moss, NW of Cadishead 33/69 (59), Newton.
- 1.27 S. recurvum a var. amblyphyllum, wooded swamp, 150 m, Britmore Bog, N. of Donhead St. Mary 31/92 (8), Stern; open birch-oak woodland, near Dunwich Forest 62/47 (25), Strauss, comm. Hill; in wet ground in oak/birch woodland, 95 m, Shining Cliff Wood, Oak Hurst, Ambergate 43/35 (57), Blockeel 18/477; Dullatur Marsh, 50 m, 26/77 (86), Watson, comm. Hodgetts; b var. tenue, in small area of Salix cinerea/Betula pubescens scrub on area of old peat cuttings, Cors Caron, near Tregaron, north-east of Maesllyn 22/66 (46), Orange 7708.
- 2.2 Andreaea rupestris a var. rupestris, rock south of pool, 310 m, Llanweir Pool, Llandegley 32/15 (43), 1986, Port; on rocks on the first ridge, north side of the island, Little Cumbrae, Strathclyde 26/15 (100), 1985, Cocking.
- 2.5B A. blyttii, on rocks in block scree in area of late snow lie, 1000 m, gully E of summit, Aonach Mor, Nevis 27/17 (97), Rothero 89/305.
- 14.5 Ditrichum zonatum b var. scabrifolium, on mossy slab in block scree, gully NW of summit, 1100 m, Cairn Toul 27/99 (92), Long & Rothero 16367.
- 17.1 Brachydontium trichodes, on Malmstone boulder in old trackway on scarp in Ash coppice, Long Copse, Selborne 41/73 (12), 1988, Rose & Crundwell.
- 18.1 Seligeria donniana, small limestone face in pit surrounded by conifers in woodland, Bedford Purlieu 53/00 (32), Hodgetts & Wigginton 2; foot of wet limestone rock face in Ash woodland, 160 m, Dove Dale, near Ilam 43/15 (39), 1988, Blockeel 17/501.
- 18.6 S. calcarea, on shaded limestone blocks, High Dyke Farm disused railway cutting 43/92 (53), Hodgetts 1495.
- 24.7 Cynodontium bruntonii on cliff, 380 m, Englishman's House, 3 miles south of Glenfarne (H30), 1965, R.D. Fitzgerald (NMW), comm. Perry.
- 28.6 Dicranella rufescens, on moist sandy soil on vertical bank by pool, 10 m, Swanholme Lakes, Lincoln 43/96 (53), Blockeel 18/467.

- 29.1 Dicranoweisia cirrata, on trees in wood, 210 m, below Tower, Slieve Gullion (H37), 1964, R.D. Fitzgerald (NMW), comm. Perry.
- 31.2 Kiaeria blyttii, rocks on W ridge of Beinn Bharrair, 550 m, Arran 16/84 (100), Corner.
- 32.4 Dicranum leioneuron, among heather at top of rock face in gully, 500 m, Taren Allgwm, 5 km. W. of Dylife 22/89 (47), Bates B2443, conf. Corley.
- 32.6 D. majus, wet woodland, bordering heath, Fen Covert, Walberswick 62/47 (25), Fisk.
- 32.9 D. fuscescens a var. fuscescens, on trunk of large old hawthorn in scrubby woodland, Lincolnshire Gate 43/91 (53), Hodgetts 1441.
- 32.12 D. montanum, on trunk of large old hawthorn in scrubby woodland, Lincolnshire Gate 43/91 (53), Hodgetts 1442.
- 32.14 D. tauricum, on fallen oak tree, 90 m, Broad Wood, Penmanshiel 36/76 (81), Long 17683.
- 33.4 Dicranodontium denudatum a var. denudatum, on log in open marshy Betula/conifer woodland, 220 m, Pickie Moss north of Legerwood 36/54 (81), Long 15583.
- 34.5 Campylopus pyriformis b var. azoricus, on algal slime on rotting Molinia, damp moorland, Butterburn Flow 35/67 (70), 1984, Rumsey; on dead Molinia tussock on hillside, 580 m, N. of Steall, Glen Nevis 27/16 (97), Corley.
- 34.9 C. atrovirens b var. falcatus, delete 72 (refer to var. gracilis): c var. gracilis, Mare's Tail, Moffat (72), 1961, Pettifer (see Trans.Brit.Bryol.Soc. 51 - record inadvertently ascribed to var. falcatus in the Census Catalogue) .
- 35.1 Paraleucobryum longifolium, on boulder by loch, 915 m, Lochan Uaine, Gharbh Choire, Cairn Toul 27/99 (92), Long & Rothero 16357 (E).
- 37.1 Fissidens exiguus, on wet shaded rocks by river, with F. pusillus, 15 m, Bradley Manor, Newton Abbot 20/87 (3), Pool.
- 37.2A F. pusillus a var. pusillus, shady calcareous rock face in ravine, 30 m, Dunglass Dean, above old bridge 36/77 (81) Long 17673: b var. tenuifolius, on vertical limestone masonry, base of N. wall of church, Stibbington 52/09 (31), Hill
- 37.6 F. rivularis, damp rock face near stream, Withial Combe 31/53 (6), 1986, Martin; rocks, in edge of river, 40 m, Afon Arth, nr Aberarth 22/46 (46), Martin & Paton; on stones in bed of stream on millstone grit, 100 m, Shining Cliff Wood, Oak Hurst, Ambergate 43/35 (57), Blockeel 18/480.
- 37.14 F. taxifolius b ssp. pallidicaulis, rocks near stream in steep woodland, Burton Wood 34/56 (60), Hodgetts 1511.
- 37.16 F. adianthoides, turf in limestone quarry, Stibbington Quarry 52/09 (31), Hodgetts 1452.
- 40.1 Tortula ruralis b ssp. ruraliformis, Trebawn Strand, Sherkin Island W/02 (H3), 1986, J.R. Akeroyd, C.J. Hora & Jury.
- 40.5 T. virescens, trunk of Guernsey Elm, Upper Drive, Hove 51/20 (13), Matcham.
- 40.6 T. laevipila b var. laevipiliformis, on Ash tree by lane to Littlebury Farm, off A604, SSW of Hemingford Abbots 52/26 (31), 1975, Finch.
- 40.8 T. muralis b var. aestiva, base of brick wall, near Blackpool 34/33 (60), 1982, Wigginton.
- 40.10 T. subulata d var. graeffii, dry rock outcrop in gully on sea cliffs, 100 m, Earnsheugh, below Coldingham Loch 36/86 (81), Long 17644.
- 40.14 T. cuneifolia, on sandy bank on sea-front, Lee-on-Solent 41/50 (11), 1956, J.W.H[odgetts] (NMW).
- 40.15 T. freibergii, on sandstone paving edging the Bridgewater Canal, just S.W. of Timperley Bridge, Timperley 33/79 (58), Rumsey; on sandstone paving edging the Bridgewater Canal, between Stretford and Trafford Park 33/79 (59), Rumsey.
- 41.3 Aloina aloides a var. aloides, on calcareous clay, quarry near Wansford 52/09 (31), Wigginton.

- 45.1 Pottia caespitosa, in chalk grassland, Isle of Wight Hill, Porton M.o.D. Research Station 41/23 (12), Jones.
- 45.2 P. starkeana d ssp. minutula, basic soil of roadside bank, 30 m, Ilslington 20/87 (3), Pool; on thin soil on breccia, Alderbury 33/61 (40), Newton.
- 46.1 Phascum cuspidatum c var. schreberianum, stubble field, Henham (25), Fisk.
- 48.1 Hyophila stanfordensis, on bare soil on path under trees on Magnesian Limestone, between Whaley and Nether Langwith 43/57 (57), Blockeel 18/031.
- 48.2 Tortula brevis, flower beds, 75 m, Dyke Road Park, Brighton 51/30 (13), Stern; flower beds, 50 m, Preston Park, Brighton 51/30 (14), Stern.
- 50.1 Gymnostomum calcareum, on mortar of brickwork of derelict mine buildings, Phoenix United disused mine, N. of Minions, Bodmin Moor 20/27 (2), Porley, conf. Whitehouse.
- 50.2 G. aeruginosum, on sheltered wall, old mine buildings, 390 m, nr. Nant-y-Moch Reservoir 22/78 (46), Martin & Paton.
- 54.4 Weissia rutilans, on ride, Stonehanger Copse, Abbots Ann 41/34 (12), Stern & Crundwell.
- 55.2 Oxystegus tenuirostris a var. tenuirostris, on wet Paludina stone rocks in stream in deep gill, Tickfold Ghyll, Kingsfold 51/13 (13), Rose.
- 59.1 Trichostomopsis umbrosa, on old gravel path near base of church wall, 60 m, East Hanningfield churchyard 52/70 (18), Pyner.
- 61.1 Cinclidotus fontinaloides, base of bridge over lock, just above water level, 25 m, on R. Chelmer, Sandford Mill Lock, Chelmsford 52/70 (19), Pyner; on rocks covered at high tides, R. Trent banks, Marton 43/88 (54), Lammiman.
- 63.2 Schistidium alpicola a var. alpicola, on rocks covered at high tides, River Trent, Marton 43/88 (54), Lammiman; on rocks on embankment of river, R. Trent, Dunham-on-Trent 43/87 (56), Blockeel 18/407.
- 64.17 Grimmia trichophylla a var. trichophylla, on sloping coping tiles of church wall buttress, growing with Dicranoweisia cirrata, churchyard, 10 m, North Farnbridge 51/89 (18), Pyner.
- 66.3 Racomitrium aquaticum, on sloping surface of irrigated grit rock by moorland stream, 300 m, Marsden Clough, Holmfirth 44/00 (63), Blockeel 18/398.
- 66.5 R. heterostichum, clay roof tile of cottage, Gutch Common, nr. Semley (8), Matcham.
- 66.8 R. lanuginosum, one small tuft, on top of brick churchyard wall, 65 m, Gosfield 52/72 (19), Pyner.
- 66.9 R. canescens, on open sandy ground, Manton Warren 44/90 (54), 1988, Wigginton.
- 69.1 Campylostelium saxicola, in thin turf of other bryophytes on low inclined rock slab on woodland floor, 30 m, coastal woodland W of Newton, Cowal 26/09 (98), Rothero 89/005.
- 75.5 Ephemerum serratum a var. serratum, ancient woodland, Monkwood 32/86 (37), 1988, Boyce; b var. minutissimum, moist clay margin of drainage ditch, 10 m, Potterhanworth Wood, Potterhanworth, ca. 12 km. SE of Lincoln 53/06 (53), Stevenson.
- 83.1 Orthodontium lineare, on rotting hardwood stumps, 75 m, Codde Hill, near Barnstaple 21/52 (4), Pool.
- 89.17 Bryum knowltonii, on bare sand in a large gravel pit at Wraybury, just NW of Staines (24), 1976, Townsend 76/23.
- 89.24 B. torquescens, ant hill in chalk grassland, Little Langford Down 41/03 (8), Hodgetts 1480; ant hill in chalk grassland, Porton Down 41/23 (12), Hodgetts 1487.
- 89.26 B. creberrimum, on unshaded rotten log, close to the Quarry Lake, Phoenix Park O/13 (H21), 1988, Kelly, conf. A.J.E. Smith, new to Ireland.

- 89.27 B. pallescens, grassy soil at foot of spoil heap of old copper mine, 380 m, north-west of Nant-y-Moch Reservoir, Eaglebrook Mine 22/78 (46), Orange 7707; Hill Cliff stone quarry 33/68 (58) in (), 1857, W. Wilson (BM), det. A.J.E. Smith, comm. Finch; calcareous soil of quarry floor, Warton 34/47 (60), 1984, Wigginton; below Ben Coona & L. Fee L/76 (H16) in (), 1831, R.J. Shuttleworth (BM), det. A.J.E. Smith, comm. Finch.
- 89.40 B. dunense, ancient woodland, Monkwood 32/86 (37), Boyce.
- 89.42 B. radiculosum, on mortar of old wall, 120 m, Rock of Cashel S/04 (H7), 1988, Long 15444.
- 89.44 B. violaceum, stubble field, Mutford, nr Lowestoft (25), Fisk; stubble field, Raveningham 62/39 (27), 1988, Fisk.
- 89.45 B. klinggraeffii, stubble field, Chediston, nr. Halesworth 62/37 (25), 1988, Fisk; wheat field, 100 m, 2 km. N.W. of Llysven 32/13 (42), Whitehouse.
- 89.48 E. microerythrocarpum, barley stubble field, near Din Moss 36/8 (80), 1988, Cocking.
- 89.49 B. bornholmense, with Ceratodon purpureus on bonfire site on heath, 185 m, Crownhill Down, Sparkwell 20/55 (3), 1986, Pool.
- 90.1 Rhodobryum roseum, Rowland Plantation, Broughton Woods 44/91 (54), Lammiman.
- 94.2 Plagiomnium affine, Rowland Plantation, Broughton Woods 44/91 (54), Lammiman; on grazed wall, 200 m. N of the 'Jolly Roger' pub on road to N end of island, Sherkin Island W/02 (H3), 1986, J.R. Akeroyd, C.J. Hora & Jury 7908.
- 94.5 P. ellipticum, flat boggy ground by burn, 200 m, Kippettlaw Burn, nr. Longformacus 36/75 (81), Long 16116; NW facing shore, 2 m, Loch of Strathbeg, nr. St. Mary's Chapel, Old Rattray 48/05 (93), Birse.
- 109.1 Zygodon viridissimus b var. stirtonii, damp culvert, base of wall, north side of church, St. Cross South Elmham 62/28 (25), Fisk; on limestone (oolite) wall, 50 m, Holt Hall Field Centre, Holt 63/03 (27), Stevenson; wall of church (limestone), Chesterton church 52/19 (31), Hodgetts 1493.
- 109.2 Z. baumgartneri, on ash, on bank of Fruin Water, Glen Fruin 26/38 (99), J.A.B. Smith, comm A.C. Smith.
- 110.2 Orthotrichum obtusifolium, on young branch of elder, with O. diaphanum, Blo' Norton Fen, 10 km west of Diss 62/07 (28), A.C. Smith.
- 110.3 O. striatum about 10 tufts with old and immature capsules on horizontal bough of huge old Crack Willow in sheltered hollow below a strip of woodland on the south-west slope of Parliament Hill, on Hampstead Heath, London Borough of Camden-Hampstead 52/28 (21), Adams.
- 110.11 O. cupulatum b var. riparium, limestone wall top, Stibbington 52/09 (31), Hill & P.E. Stanley.
- 110.15 O. pallens, on branch of Elder bush at edge of woodland, 130 m, Clough Wood, near Winster 43/26 (57), Blockeel 18/498, conf. Crundwell.
- 111.2 Ulota drummondii, on ash, on bank of Fruin Water, Glen Fruin 26/38 (99), J.A.B. Smith, comm A.C. Smith.
- 111.3 U. crispa b var. norvegica, three tufts on three separate Crack Willows in the valley above Hampstead Ponds, just SW of Parliament Hill, Hampstead Heath 52/28 (21), 1990 (first found 1989, with immature capsules), Adams; on trunk of Salix 1.5 m from ground, near Little Ouse, Horse Meadows west of Thetford 52/88 (26), 1988, Whitehouse, first found by Stern; on Salix in wet ground by pond, 25 m, Thorpe Hall, Rudston, near Bridlington 54/16 (61), Blockeel 18/417.
- 111.6 U. phyllantha, trunk of Poplar, 140 m, Wardour Wood, Donhead St. Andrew, 31/92 (8), Crundwell, first found by Stern, 1988.
- 115.1 Cryphaea heteromalla, on elder in scrubby ground behind dunes, 5 m, Gibraltar Point 53/55 (54), Blockeel 18/405.
- 137.4 Thuidium philibertii, calcareous grassland, 135 m, Lintmill near Greenlaw 36/74 (81), Long 17609.
- 139.2 Cratoneuron commutatum a var. commutatum, in flush, 300 m, Slieve

- Gullion (H37), 1964, R.D. Fitzgerald (NMW), comm Perry.
- 141.3 Amblystegium tenax, base of Salix alba by lake, Stibbington 52/09 (31), Wigginton.
- 143.4 Drepanocladus fluitans a var. fluitans, acid peaty pool, Mid Hill, S.W. of Alemoar Loch 36/31 (80), 1987, Corner.
- 143.5 D. exannulatus b var. rotae, moorland flush, 430 m, Long Mynd, Church Stretton 32/49 (40), Port; in pool in boggy moorland hollow, 195 m, Dowlaw Moss near Haud Yauds 36/86 (81), Long 15557; flushes on W. side of Ben Buck, 640 m, Ochils 27/80 (87), Corner.
- 144.3 Hygrohypnum luridum a var. luridum, on base of Fraxinus in flood-plain woodland, close to Beaulieu River, W. of North Gate, S. of Ipley, New Forest 41/30 (11), Rose.
- 148.1 Scorpiurium circinatum, forming luxuriant 'epaulettes' on old limestone bust under trees, 75 m, Buscot Park, Buscot 41/29 (22), Bates B2531.
- 149.2 Homalothecium lutescens, exposed limestone face in quarry, Stibbington Quarry 52/09 (31), Hodgetts 1451 - replaces previous entry which is untraced, comm. Hodgetts.
- 149.3 H. nitens, basic-flushed sloping boggy field, 274 m, near Llanfihangel-yng-Ngwynfa 33/01 (47), Benoit.
- 150.2 Brachythecium glareosum, open calcareous grassland in disused limestone quarry, near Wansford 52/09 (31), Wigginton.
- 150.4 B. salebrosum, on leaf litter in silver birch wood, Knettishall Heath 52/98 (26), A.C. Smith; on lumps of clinker in light woodland, Blists Hill, nr. Ironbridge 33/60 (40), Hill.
- 150.5 B. mildeanum, in base-rich tall herb fen fringe of pond, old brickpit workings, Farcet, near Peterborough 52/19 (31), Wigginton.
- 154.3 Rhynchostegium murale, limestone block, church wall, Stibbington 52/09 (31), Wigginton.
- 155.5 Eurhynchium praelongum b var. stokesii, on clay soil in wood between Claxby and Normanby-le-Wold. S. of Caister 53/19 (54), Corley.
- 155.6 E. swartzii b var. rigidum, calcareous turf in limestone quarry, Stibbington Quarry 52/09 (31), Hodgetts 1454; tree base in Bedford Purlies Wood, near Wansford 52/09 (32), Wigginton.
- 155.8 E. speciosum, marshy ground by water-filled gravel pit, Stibbington Gravel Pits 52/09 (31), Hodgetts & Wigginton 1.
- 156.2 Rhynchostegiella curviseta, on sheltered stonework by stream, 40 m, Marsh Farm, Swimbridge 21/63 (4), Pool.
- 159.3 Plagiothecium denticulatum b var. obtusifolium, with Isopterygium elegans in crevice under overhanging cliff, 620 m, above Llyn Llygad Rheidol, Plynlimon 22/78 (46), Stern, M.V. Fletcher & Bates B2381.
- 159.5 P. curvifolium, on stump in wooded valley, 20 m, Tower Dean, below railway 36/77 (81), Long 15530.
- 159.6 P. laetum, base of Ash trunk, 210 m, Stanner Hill, Lower Harpton 32/25 (36), Port; on tree base in swampy Betula/Salix carr, 220 m, Pickie Moss north of Legerwood 36/54 (81), Long 15585.
- 159.9 P. succulentum, on rotting stump in wood, Thelnetham Fen 62/07 (26), 1985, A.C. Smith.
- 160.2 Herzogiella seligeri, on fallen rotting branch, Blo' Norton Fen, 10 km. west of Diss 62/07 (28), A.C. Smith.
- 163.1 Taxiphyllum wisegrillii, rock crevice in ravine, 90 m, Sron Daraich Ravine, Tokavaig Skye 18/61 (104), Hodgetts 1541.
- 166.1 Platygyrium repens, on horizontal elder branch in overgrown hedge, 128 m, beside Brecon & Abergavenny Canal tow path, 1 km SE of Pencelli 32/12 (42), Woods.
- 170.1 Ctenidium molluscum b var. fastigiatum, on limestone rock face nr. Old Down Wood, Frome 31/74 (6), Martin.
- 173.4 Rhytidiadelphus loreus, acid woodland soil, Kings Wood, Heath and Reach 42/93 (30), 1988, Outen, Whitehouse & Preston.

Contributors of records, 1989

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THINGS MOSS IS USED FOR.....2

"It is best dried in the summer sun and turned like hay. When it is finally crisp dry it can be rubbed through a sieve with a mesh size of about 1 sq. cm. A small quantity can be given a final drying in a very low oven - the sort one would use for meringues..."

What is "it"? Can it really be a bryophyte? Yes, it is sphagnum, and Dr James Cobb (Growing from Seed 4(2), 18-20, 1990) recommends the "reddish coloured variety that grows on the high moors" - clearly S. capillifolium. Wonderful for adding to seed composts for Lilium, Primula and Meconopsis; "sphagnum will improve nearly anything". So try it with your strawberries, or sprinkled into your boiled egg. And it is a renewable resource.

Mark Hill

"A BEGINNERS PRACTICAL GUIDE TO THE EXAMINATION OF BRYOPHYTES"

A small consortium of members has begun the task of writing a practical guide for beginners in bryophytes. Among the various sections is one on technical tips, eg. ways of cutting leaf sections; observing each side of concave leaves; how to hold a capsule at a required angle. If any member has their own special tips for dealing with particular problems of examining bryophyte material we would be happy to hear from you so that we can include them in the handbook.

Another section will deal with drawing bryophytes as a recording technique. We would very much like to hear about the problems which the less artistic amongst us have with drawing. If you feel that you can express your problem on paper then please let us have it so that we can address it if possible.

Please forward all material to Jennifer Ide, Roehampton Institute, Whitelands College, West Hill, Putney, SW15 3SN, who will distribute it appropriately.



KEY TO BRITISH AND IRISH SPECIES OF THE
MOSS FAMILY BRACHYTHECIACEAE

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INTRODUCTION

Whilst some species of the Brachytheciaceae such as those belonging to *Homalothecium* and *Cirriphyllum* are readily recognised, others such as *Brachythecium*, *Eurhynchium* and *Rhynchostegium* species do at times present problems if the plants are not "typical" or lack sporophytes. Keys to genera are difficult to use because classification and identification are based upon sporophyte rather than gametophyte characters. It was thought, therefore, that a key to species rather than to genera of the Brachytheciaceae of the British Isles based primarily upon gametophyte characters might be of value.

Nomenclature follows Smith (1978) although it should be noted that *Isothecium striatulum* is now placed in *Eurhynchium*, *Pseudoscleropodium purum* in *Scleropodium* (Corley et al., 1982) and *Homalothecium nitens* in *Tomenthypnum* in the Amblystegiaceae (Hedenäs, 1987). Additionally there are two species not included in Smith (1978), *Brachythecium appleyardiae* (McAdam & Smith, 1982) and *B. trachypodium* (Corley, 1990).

For plants with mature undehiscent capsules the shape of the lid is a very useful character. The lid has a subulate beak in *Scorpiurium*, *Cirriphyllum*, *Rhynchostegium*, *Eurhynchium* and *Rhynchostegiella*. The lid is rostrate or conical in *Isothecium* (but subulate in *I. striatulum*), *Brachythecium*, *Pseudoscleropodium*, *Scleropodium* and *Homalothecium*.

In *Brachythecium* the extent of the alar cells is of value in distinguishing some species. A useful though not easily observable character is whether or not the midrib of branch leaves ends in a small tooth-like projection on the abaxial (dorsal or back) side of the leaf (Fig.10). The projection if present is best observed by carefully focussing up and down on the back of a branch leaf using high power. Species in which such a projection occurs are *Homalothecium sericeum*, *Isothecium striatulum*, all *Eurhynchium* species, *Brachythecium starkei*, *B. velutinum*, *B. trachypodium*, *B. appleyardiae* and *B. plumosum*. In *Scorpiurium circinatum* the midrib has several small teeth on the back.

In the following key all references to leaves and mid-leaf cells are to stem and stem leaves respectively, unless otherwise stated. For some species, short of giving a full description, separation is sometimes difficult. However, if a dichotomy is reached in which the plant in question does not fit either half of the dichotomy then it is likely that in the previous dichotomy the wrong alternative has been selected.

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KEY

- 1 Leaves strongly concave, apex obtuse to rounded with long filiform apiculus 2
Leaves not as above 3
- 2 Stems pinnately branched, common lowland plant *Cirriphyllum piliferum*
Stems irregularly branched, very rare high alpine plant
Cirriphyllum cirrosum
- 3 Alar cells 1-3 times as long as wide, strongly incrassate, opaque, forming a distinctive group (Fig.1), at least in older leaves 4
Alar cells not as above 8
- 4 Leaves longitudinally plicate *Isothecium (Eurhynchium) striatulum*
Leaves not plicate 5
- 5 Leaf apices acute to obtuse, margins denticulate only near apex, capsules + erect *Isothecium myurum*
Leaves with short or long acumen, denticulate + from base to apex, at least obscurely so, capsules inclined 6
- 6 Leaves gradually or abruptly tapering to acute apex, plants often with an orange-brown tint *Isothecium holtii*
Leaves tapering to short to long fine acumen, orange-brown tint lacking 7
- 7 Secondary stems ascending to erect, sub-dendroid with branches crowded near ends *Isothecium myosuroides* var. *myosuroides*
Secondary stems procumbent, branches distant
Isothecium myosuroides var. *brachythecioides*
- 8 Stems with dense brown tomentum, leaves longitudinally plicate, tapering + from base to apex, fen plant
Homalothecium (Tomenthypnum) nitens
Stems without tomentum, leaves plicate or not, shape various, habitat various 9
- 9 Stems with numerous crowded + ascending short curved branches, leaves without auricles 10
Branching not as above or leaves with auricles 12

- 10 Branch leaves slightly concave, midrib very stout, denticulate on abaxial side above, marginal cells 1/3 way up leaf hardly twice as long as wide, seta smooth *Scorpiurium circinatum*
 Branch leaves strongly concave, midrib not stout, not denticulate, marginal cells longer, seta papillose 11
- 11 Stem leaves broadly ovate, cells 4-10 times as long as wide *Scleropodium cespitans*
 Stem leaves ovate-oblong to cordate-triangular, cells 10-20 times as long as wide *Scleropodium tourettii*
- 12 Stems regularly pinnately branched, shoots julaceous with strongly concave leaves, leaf apices rounded to obtuse, sharply apiculate *Pseudoscleropodium (Scleropodium) purum*
 Plants not as above 13
- 13 Leaves longitudinally plicate, longly tapering from near base, cells of + uniform shape except for alar cells 14
 Leaves not plicate or if so then not longly tapering and/or basal cells shorter than cells above 15
- 14 Stems attached to substrate by rhizoids for most of their length, capsules erect *Homalothecium sericeum*
 Stems attached to substrate at base, capsules inclined *Homalothecium lutescens*
- 15 Leaves triangular or cordate-triangular, usually finely acuminate 16
 Leaves broadly ovate to linear-lanceolate, finely acuminate or not 24
- 16 Leaves longitudinally plicate, seta smooth 17
 Leaves not plicate, seta smooth or papillose 19
- 17 Leaves strongly plicate 18
 Leaves only weakly plicate, very rare plants 34
- 18 Plants forming coarse wefts, branches not crowded, alar cells rectangular, common plant *Eurhynchium striatum*
 Plants forming rough mats, branches crowded, alar cells quadrate, very rare plant *Eurhynchium meridionale*
- 19 Stems regularly 1-2-pinnately branched, common plants 20
 Stems irregularly branched, rare plants 21
- 20 Stems pinnately branched, branch leaves lanceolate to ovate-lanceolate, 2.7-5.0 times as long as wide *Eurhynchium praelongum* var. *praelongum*
 Stems 1-2-pinnately branched, branch leaves ovate to ovate-triangular, 1.6-2.6 times as long as wide *Eurhynchium praelongum* var. *stokesii*
- 21 Base of stem leaves not decurrent, leaf apices acute or shortly acuminate, vary rare lowland or alpine plants 34
 Leaf bases longly decurrent, apices acuminate or longly acuminate, rare alpine plants 22
- 22 Midrib extending into longly acuminate channelled acumen *Brachythecium reflexum*
 Midrib extending ca halfway up leaf, acumen shorter, not channelled 23
- 23 Leaf margins plane or slightly recurved, alar cells rectangular *Brachythecium starkei*

- Margins strongly recurved near base, alar cells quadrate
- Brachythecium glaciale**
- 24 Leaves tapering to + filiform acumen, longitudinally plicate, margin usually + entire, seta smooth 25
- Leaf apices not filiform or if so then leaves not plicate, margin entire or denticulate, seta usually papillose 28
- 25 Rectangular basal cells hardly ascending up leaf margin (Fig.2)
- Brachythecium glareosum**
- Rectangular basal cells forming triangular group ascending up margin (Figs.3,4) 26
- 26 Plants autoecious, medium-sized to robust, leaf bases hardly decurrent (Fig.3), rare plant
- Brachythecium salebrosum**
- Plants dioecious, small, leaf bases longly decurrent (Fig.4) 27
- 27 Shoots silky and leaves closely imbricate when dry, tufts of reddish brown rhizoids lacking, common plant
- Brachythecium albicans**
- Shoots not silky, leaves + erect-flexuose when dry, tufts of reddish brown rhizoids arising from leaf bases, very rare plant
- Brachythecium erythrorrhizon**
- 28 Midrib of branch leaves ending in small tooth-like projection on abaxial surface (Fig.10), stem leaves + ovate, not secund 29
- Midrib not ending in projection or if so then stem leaves lanceolate, narrowly lanceolate or secund 36
- 29 Primary stems rhizomatous, leaves longitudinally plicate, mid-leaf cells 3-5 μm wide
- Eurhynchium schleicheri**
- Plants not as above 30
- 30 Plants very slender, leaves less than 0.5 mm long, mid-leaf cells 2-5 times as long as wide
- Eurhynchium pumilum**
- Plants and leaves larger, mid-leaf cells 6-16 times as long as wide 31
- 31 Stem leaves ovate to broadly ovate, branch leaves acute to acuminate, seta papillose, common plants 32
- Stem leaves cordate-triangular to triangular or ovate-triangular, branch leaves acute, seta smooth, very rare plants 34
- 32 Synoecious or autoecious, plants usually dark green, mid-leaf cells 9-16 times as long as wide
- Eurhynchium speciosum**
- Dioecious, plants usually yellowish or yellowish green, mid-leaf cells 4-11 times as long as wide 33
- 33 Stems with distant branches, leaves + distant, + complanate
- Eurhynchium swartzii** var. **swartzii**
- Branches crowded, leaves crowded, not complanate
- Eurhynchium swartzii** var. **rigidum**
- 34 Stems not crowded, stem leaves not complanate, branches 3-10 mm long, branch leaves patent
- Eurhynchium pulchellum** var. **pulchellum**
- Leaves crowded, stem leaves slightly complanate, branches 1.5-5.0 mm long, branch leaves imbricate 35
- 35 Mid-leaf cells 36-56 μm long
- Eurhynchium pulchellum** var. **diversifolium**
- Mid-leaf cells 56-80 μm long
- Eurhynchium pulchellum** var. **praecox**
- 36 Leaf margins denticulate + from base to apex 37
- Leaf margins entire or denticulate from widest part of leaf or above 41

- 37 Leaf apices acute to obtuse, seta smooth 38
 Leaf apices acuminate, seta smooth or papillose 40
- 38 Shoots not glossy nor leaves imbricate when dry, leaves concave or not, tapering to apex **Rhynchostegium confertum**
 Shoots glossy and leaves closely imbricate when dry, leaves strongly concave, shortly pointed with acute to obtuse apex 39
- 39 Leaves imbricate to spreading when moist, mid-leaf cells 6-11 μ m wide, 8-13 times as long as wide **Rhynchostegium riparioides**
 Shoots julaceous with closely imbricate leaves when moist, cells 4-8 μ m wide, 12-17 times as long as wide **Rhynchostegium lusitanicum**
- 40 Leaves hardly concave, apex twisted through 180° , seta smooth **Rhynchostegium megapolitanum**
 Leaves concave, apex not twisted, seta papillose 44
- 41 Leaves ovate-lanceolate to broadly ovate, apex not longly acuminate 42
 Leaves lanceolate or linear-lanceolate or if wider then apex longly acuminate 48
- 42 Leaves acute to obtuse or leaf cells 3-5 times as long as wide, decurrent auricles lacking, seta smooth 43
 Leaves acuminate, cells longer, or if acute to obtuse then decurrent auricles present, seta usually papillose 44
- 43 Leaves strongly concave, mid-leaf cells 5-8 μ m wide, 7-12 times as long as wide, common plant **Rhynchostegium murale**
 Leaves hardly concave, cells 10-16 μ m wide, 3-5 times as long as wide, very rare plant **Rhynchostegium rotundifolium**
- 44 Leaves strongly concave, widest at *ca* middle, rapidly narrowed to acuminate to filiform apex, mid-leaf cells 5-8 times as long as wide **Cirriphyllum crassinervium**
 Leaves concave or not, widest *ca* 1/4 from base, apex not filiform, cells 17-20 times as long as wide 45
- 45 Leaves secund when moist, midrib ending in projection on abaxial side of branch leaves, seta smooth below, papillose above **Brachythecium plumosum**
 Leaves not secund, midrib not ending in abaxial projection, seta papillose throughout or smooth throughout 46
- 46 Alar cells much enlarged, forming distinct hyaline decurrent auricles (Fig.5) **Brachythecium rivulare**
 Alar cells not forming hyaline auricles 47
- 47 Leaves plane or concave, cells at base except alar cells hardly differing in shape or size from cells above (Fig.6), seta smooth, occasional plant **Brachythecium mildeanum**
 Leaves concave, basal cells much shorter than cells above (Fig.7), seta papillose, very common plant **Brachythecium rutabulum**
- 48 Leaves lanceolate, lanceolate-triangular or ovate-triangular, apex longly acuminate, margin \pm denticulate, seta papillose, lid conical 49
 Leaves lanceolate to oblong-lanceolate, apex acute to obtuse or linear-lanceolate and longly acuminate with \pm entire margins, seta smooth or papillose, lid with subulate beak 52

- 49 Midrib extending into leaf acumen, alar cells extending \pm to midrib (Fig.8), branch leaves denticulate above, lacking abaxial projection at end of midrib, seta smooth below, papillose above

Brachythecium populeum

Midrib extending $1/2-2/3(-4/5)$ way up leaf, alar cells not extending to midrib (Fig.9), branch leaves denticulate \pm from base to apex, midrib ending in abaxial projection, seta papillose throughout 50

- 50 Leaves usually \pm falcate, tapering \pm from base to apex, common lowland plant

Brachythecium velutinum

Leaves not or only slightly falcate, tapering from $1/3-1/2$ way up, very rare plants 51

- 51 Stem leaves ovate-triangular, midrib ending $3/4-4/5$ way up leaf, branch leaves ovate to lanceolate, lowland plant

Brachythecium appleyardiae

Stem leaves lanceolate-triangular to ovate-lanceolate, midrib extending about halfway up leaf, branch leaves narrowly lanceolate, alpine plant

Brachythecium trachypodium

- 52 Leaves linear-lanceolate, longly acuminate 53

Leaves lanceolate to oblong-lanceolate, acute to obtuse 54

- 53 Seta smooth **Rhynchostegiella tenella** var. *tenella*

Seta papillose **Rhynchostegiella tenella** var. *litorea*

- 54 Midrib extending $1/2-2/3$ way up leaf, mid-leaf cells 8-10 times as long as wide

Rhynchostegiella curviseta

Midrib extending $3/4$ or more way up leaf, cells 5-7 times as long as wide

Rhynchostegiella teesdalei

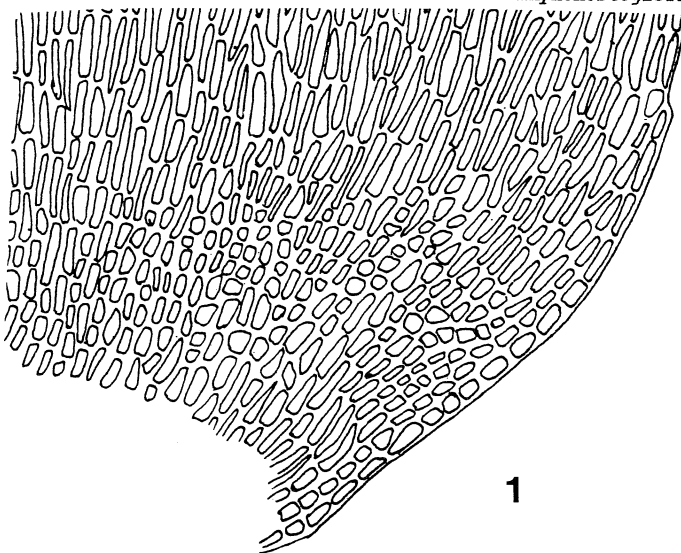
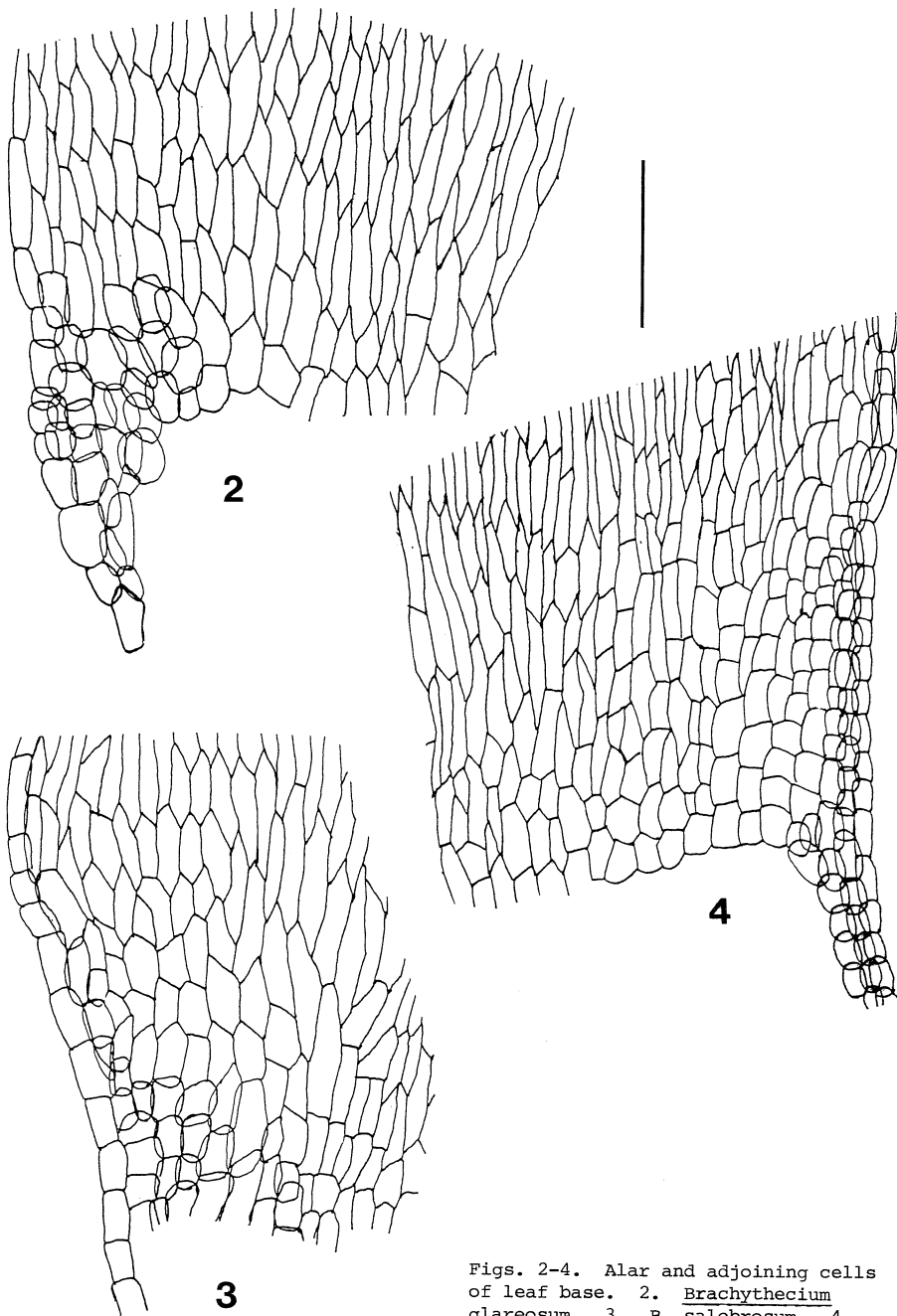
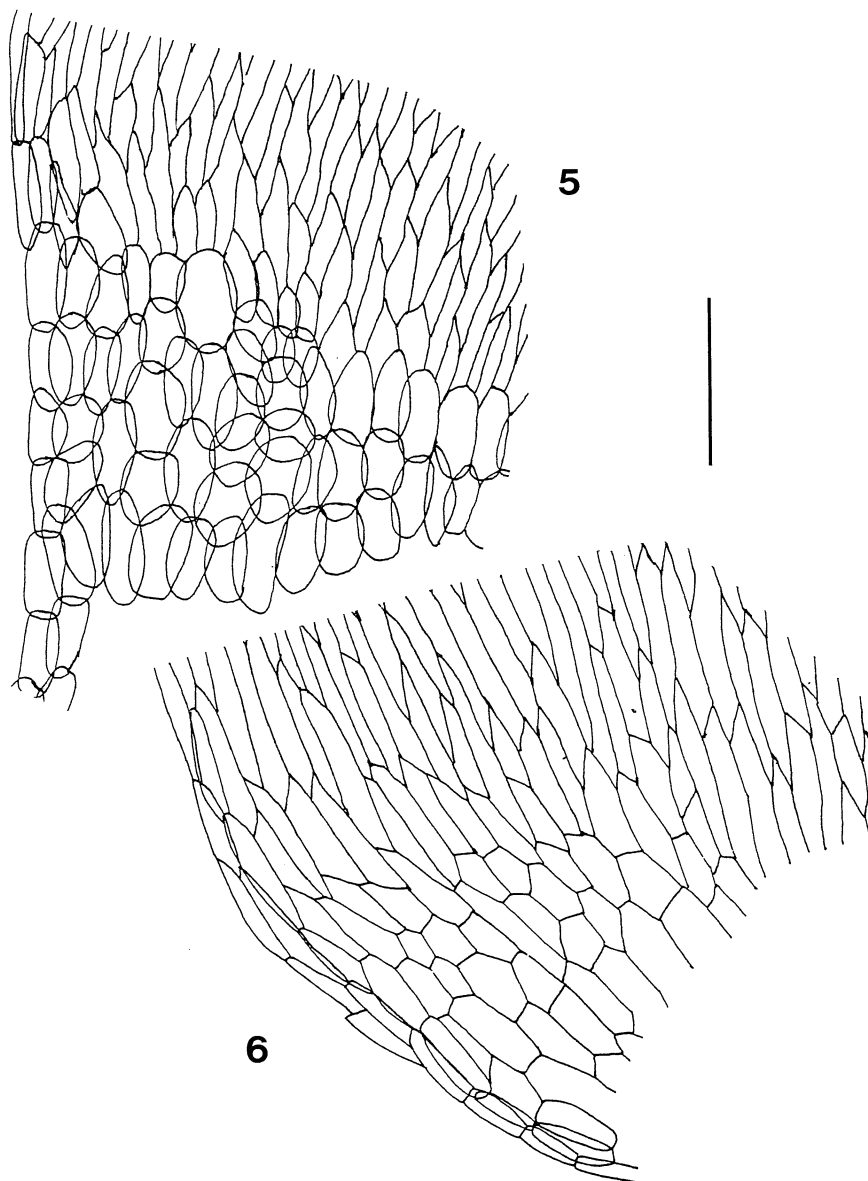


Fig. 1. Isothecium myosuroides: alar and adjoining cells of leaf base.

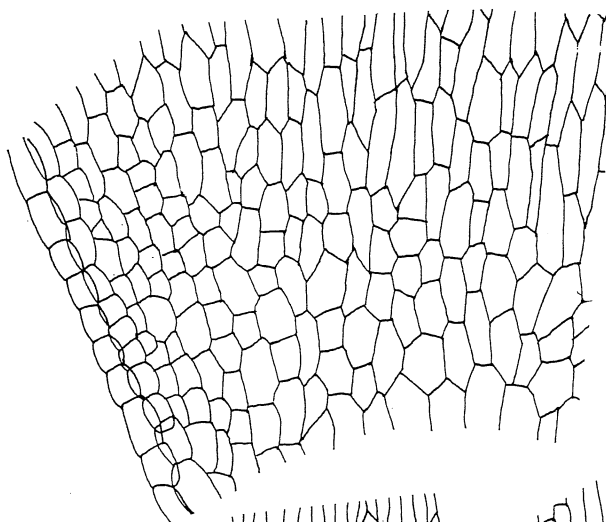
Scale = 100 μ m.



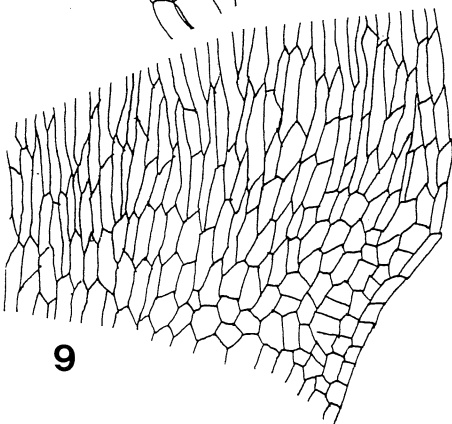
Figs. 2-4. Alar and adjoining cells of leaf base. 2. Brachythecium glareosum. 3. B. salebrosum. 4. B. albicans. Scale = 100 μ m.



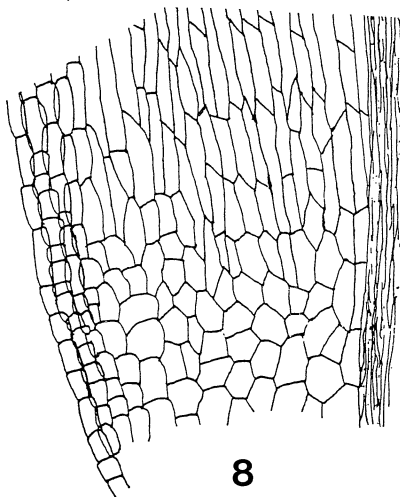
Figs. 5-9. Alar and adjoining cells of leaf base. 5. Brachythecium rivulare. 6. B. mildeanum. 7. B. rutabulum. 8. B. populeum. 9. B. velutinum. Scale = 100 μ m. Fig. 10. Eurhynchium swartzii: projection from end of midrib on abaxial side of branch leaf in surface and side views. Scale = 25 μ m.



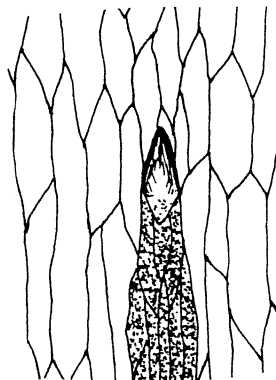
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THE TALE OF CLIFF AND DOT

[Cliff Townsend recently wrote to say that he and his wife Dot celebrated their Ruby Wedding in June. Congratulations to them both! At the celebrations their son Bruce read out the following poem to a large gathering. The secret is that Dot's maiden name was Dorothy MOSS. Is Cliff the only bryologist to have married a Moss? Thanks to him, anyway, for this light relief. -Ed.]

Now my old Mum and Dad have been together forty years;
They've stuck it out through good and bad, through laughter and through tears;
For richer and for poorer, each day through thick and thin,
Except for one short interlude it's just been her and him.
It hasn't always been that way, for once they were apart,
And how they met is quite a tale, so I guess I'd better start.
The hero of the story is a lanky Cheltenham lad
In case you haven't guessed, it is none other than my Dad.

In those days he was normal, but he had the strangest habit;
He liked to crawl through fields and bogs as though he were a rabbit.
In search of moss he travelled, and on such an expedition,
While sunk up to his knees in grime, he spied an apparition.

For as he cast his eyes about, in front of him he found
A tuft of long brown curly hair rising from the ground.
He took a step, he bent, he reached, he pulled it from the spot,
And with it there came up a head, which said, "Hello, I'm Dot!"

In shocked surprise he let her go, and as he stood and stuttered,
Lying face down in the mud the poor girl coughed and spluttered,
Until our gallant hero, recovering his composure
Rescued her in time to stop her dying from exposure.
He bravely squelched her to him and enquired of her plight,
And, tremblingly, her story she endeavoured to recite.

"I was the princess Dorothy, the fairest in the nation;
My plight is due to getting into an altercation
With my wicked stepmother, who, tragedy to tell,
Could not tolerate my beauty, and so placed me on a spell.
Since then I have been doomed to lie here in this muck,
Till some great raving lunatic should come and pull me up."

"A princess!", cried the lad, "with beauty - and hopefully with wealth!
This is a time for boldness, not grovelling and stealth."
He took her in his hand, and, falling to his knee,
Gazing in her tear-stained eyes, said, "Will you marry me?"
"Alas!", said she, "I cannot, for it would be far too harsh
To marry a man who'd marry a girl he's pulled out of a marsh!"
"That's nothing!", said our hero, "I've heard about a prince
Who married a girl who kissed a frog - it's enough to make you wince!"

And so with these persuasive words our hero did prevail,
And they were duly married - and, if you should doubt this tale,
The evidence remains today, because of Dad's obsession
To keep a piece of every moss at home in his possession.
I've lived there, and I know that in a cupboard in the attic
A lock of dark brown curly hair lies in a paper packet!

COARSE Dicranum GROWING

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Most of my first Dicranum gatherings, made as long as 20 years ago, are still growing, unless I have discarded them as uninteresting. They usually make good-sized tufts of healthy material which persist for several years. They can withstand prolonged drought, and conditions ranging from partial sunshine to fairly deep shade. Last year (1989) they were watered only 3 or 4 times in the three months June, July and August. Though I have used other soils, all seem happy on horticultural peat. Though they have produced no fruit here they are remarkably easy plants to maintain.

However, there is one fundamental difference between Dicranum and the plants with which gardeners are familiar. They rely on water - lime-free of course - sprayed from above. I have found that water from below, moving up into the plants from the substrate, almost invariably damages them. Chance shoots in very wet cultures and in very humid conditions may make substantial growth, but even on peat these are likely to be disfigured by "lime" deposits on the leaf tips. In the drier conditions appropriate for most dicranums I find clay pots, not plastic pots, almost essential. The most important accessory for dicranum growing under cover is a large pump-up pressure spray and a supply of lime-free water. Their most important need is that, when sprayed, the entire plant should be moistened, and stay moist long enough to make useful growth.

The resulting conditions are surprisingly dry, the peat substrate in many pots being dust-dry for most of the year. The plants are mostly in diffused sunshine, dry and dormant in summer, except in cool wet weather when humidity is high enough for them to stay moist for a day or two, making watering worthwhile. Even the bog species D. spurium grows quite well, though slowly, in these conditions. For D. bonjeanii from a chalk habitat I have added a little chalk soil to the usual peat. It seemed the right thing to do, but I have no idea if the plant has grown any better for it.

Very similar in their needs are the species I have kept of related genera, Kiaeria, Dicranodontium and the New Zealand plant Dicranoloma grossialare. I have tried to keep confused, confusing and unnamed material from high Scottish mountains and from arctic Norway, but mostly on mineral soil, and have lost most of them. However, Kiaeria blyttii grew well.

Three species have been treated differently here at times. An early culture of Dicranum tauricum (1966) was lost, a second lingered for years in the same conditions described above, but on acid bark, not peat, making erratic and stunted growth. It is more reliably grown on peat. D. montanum forms tufts, more easily established on fresh bark or peat surfaces than the leaf tips of the last species. It can also be maintained and propagated on peat. D. flagellare, revived from a year-old herbarium specimen, was placed on mounted bark: finely grated elm bark, pressed into the surface of an expanded polystyrene tile which has been covered with a spirit based glue such as UHU, is a very convenient substrate, but it is not right for this species, perhaps being too basic. For ten years it made only poor growth consisting almost entirely of flagelliform shoots. In the past two years it has made better and more normal growth, though still very scarce, in dry conditions on strongly drained peat or acid bark, as described above.

My complacency about dicranum growing was upset in autumn 1988 by insect larvae. I did not catch or identify the culprits. They were probably crane-fly

or moth larvae. They burrowed through the humus beneath the tufts, causing lines of rapid mould growth and decay which destroyed the live shoots above their tracks. Many long-standing Dicranum and Campylopus were damaged or almost destroyed, especially three nice cultures of K. blyttii. Derris dust failed to stop them. In May 1989 I sprayed the entire live bryophyte collection with Bio Long-Last, an insecticide containing dimethoate and permethrin. I don't like the smell of the stuff, but it did no harm to the plants and put an end to the problem. I now spray it annually, during early summer.

Apart from that setback I have found Dicranum remarkably hardy and persistent plants. They are also a challenge to the intuitive - and often incorrect - idea that mosses, to be grown successfully, need high humidity and wet conditions.

HETEROSPORY sensu stricto

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Dr Whitehouse (Whitehouse, 1990) raises the question of the use of 'heterospory' (Bulletin 55). In my article about Sphagnum (Bell, 1989) I wrote 'genuine heterospory' to contrast the situation in Macromitrium with the spurious heterospory in Sphagnum, using 'heterospory' in a general sense.

With regard to the more rigorous use of the term, I proposed in 1979 (Bell, 1979) that heterospory be restricted to those instances in which megasporogenesis was accompanied by resorption of potential mother cells or of meiotic products. The situation in Macromitrium would then be referred to as anisospory.

The relevance of the heterospory of Selaginella to the evolution of seeds is doubtful. Selaginella lacks the regular loss of three spores in each megaspore tetrad seen in the heterosporous ferns and seed plants. This behaviour in the tetrad, which may have a Mendelian basis, appears to be a new feature in evolution, possibly acquired in several lines of descent independently. It may or may not have been preceded by irregular heterospory of the Selaginella kind, or by anisospory. The fact that the megaspores and microspores of the flowering plants often differ little in size (the megaspores may even be the smaller) has led some to the view that the angiosperms had a homosporous origin (DiMichele et al., 1989).

Bell, P.R. (1979). The contribution of the ferns to an understanding of the life cycles of vascular plants. In A.F. Dyer (ed.) The Experimental Biology of Ferns, pp. 57-85. Academic Press, London.

Bell, P.R. (1989). 'Heterospory' in Sphagnum: fifty years of error. *J. Bryol.* 15, 679-682.

DiMichele, W.A., Davis, J.I. & Olmstead, R.G. (1989). Origins of heterospory and the seed habit: the role of heterochrony. *Taxon* 38, 1-11.

Whitehouse, H.L.K. (1990). Heterospory in Macromitrium: a confusing terminology. *Bull.Br.bryol.Soc.* 55, 33-34.

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