

The BRYOLOGICAL TIMES

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Newsletter of the International Association of Bryologists

April, 1985.

No. 31

Editorial

IT IS A SAD, but necessary fact, that this column must begin with an admission that some apologies are in order. Firstly, the master copy of the January issue was late leaving Reading, so number 30 was not received by many members until well into February. Secondly, many copies were deficient with bad smudging on page 9, and such poor printing of page 11 that some of the text was almost illegible. The Editor is only too uncomfortably aware that there were other printing deficiencies in some of the 1984 issues also. Strenuous efforts are being made to overcome these difficulties in 1985.

A further problem was the absence of the copy of the Constitution from the papers relating to the postal ballot distributed with issue No. 30: without it the ballot paper does not make sense. A special mailing of the Constitution was made to all members in late February, but if anyone is still without a copy, please consult *Taxon*, 29 (5/6):680-681, 1980, where it was published. Altogether, January saw a bad start to some of IAB's 1985 activities!

But some good things also happened in that month! Editing was completed of Dr. W. R. Buck's 16-page Index to Nos. 1-25 of *The Bryological Times*. It is a comprehensive index, with a lot of cross referencing and should be a great help to locating information in the early numbers. It is dated February 1985, and is distributed with this issue. The Editor feels sure all members will wish to join him in publicly thanking Dr. Buck for all his hard work on behalf of readers of this newsletter.

Last year saw the launch of the *Research and Development* column with a speculative article by Professor Briere (*Bryol. Times*, 29: 5-6): this issue carries a further article. It

can now be announced that Dr. R. Mues (Saarbrücken) and Professor J. G. Duckett (London) have agreed to be joint editors for the column. Already four manuscripts have been sent to them and others have been promised.

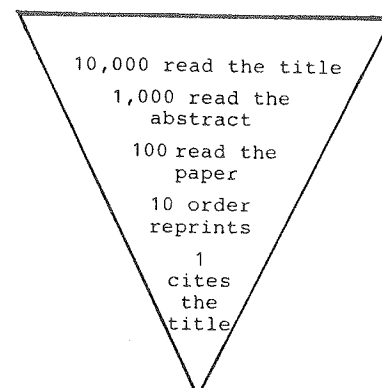
It is hoped to establish two other columns this year. One is the already-announced *Nomenclature column* which is being organized by Drs. Gea Zijlstra (*Bryol. Times*, 30:2). Its purpose is to keep readers abreast of the nomenclatural proposals published in *Taxon* as well as the activities of the IAPT Bryophyte Nomenclature Committee. The second is to be a taxonomically-based column, as yet without a formal title, but with Professor Dale Vitt (Alberta) and Dr. John Engel (Chicago) "signed up" as joint editors. The column will deal with problems in the delimitation of bryophyte taxa and build on the start made with such topics during the Geneva Workshop. The Editor would also like to see a column related to the other main group of topics discussed in Geneva, i.e. progress with floristic exploration. The aim of such a column would be to keep readers abreast of significant developments in the different continents. Anyone with an interest in developing such a column is asked to get in touch with him.

It is not the intention that each issue of *The Bryological Times* will carry articles from every column, but that topics from one or two columns should, if possible, be included. Clearly attention has to be paid to the balance of articles in an issue. So long as letters in the postbag continue to support a broadly-based newsletter, it will be kept that way. So some of the ideas behind the new columns are not only to maintain the broad appeal of our newsletter, but also to get more people involved in its preparation and production. This seems to be one of the best ways of ensuring a strong organization with varied output.

The January issue carried

a most encouraging perspective of current IAB activity by our President. For this reason comment in this article is mainly about plans for *The Bryological Times*. Suffice it to say that the next major steps in activities in IAB are likely to be centred on the Bryo-ecological Conference in Hungary. For example, the results of the postal ballot on the Constitutional changes should be available by then. Reports can also be expected on progress with the preparation of Volume 3 of the *Advances*, and whether we are to have a revival of the *Bulletin* in *Taxon*. No doubt the state of IAB projects will also be reviewed. The announcement in *Bryol. Times*, 27:7, that over 140 provisional registrations had been received for the Bryo-ecology Conference is most encouraging. When taken together with Dr. Orban's statement (*Bryol. Times*, 30:9) that more than 100 preliminary registrations have been received for the 4th meeting of the Central and East European Bryological Working Group Meeting, there is every promise of exciting times in Hungary. We should all have a new and invigorated outlook by the time we come to the wine-tasting in Tokay! It would be a brave person who would predict the state of IAB at the end of that session!!

THE PUBLICATION PYRAMID



Modified for bryologists by Jan-Peter Frahm, Duisburg, from H. Biedermann, *Microcomputer und Publikation*, Stuttgart 1984.

RESEARCH & DEVELOPMENT

FUNGI IN HEPATICS

By

K. Pocock & J.G. Duckett

WHEREAS the last two decades have seen major advances in our understanding of the relationship between *Anthoceros* and *Blasia* and the blue-green bacterium *Nostoc* (Duckett et al., 1977; Rodgers and Stewart, 1977a, b, Rodgers, 1978) the far more widespread associations between hepatics and endophytic fungi have been totally ignored (Schuster, 1966, p. 249). We are not aware of any exploration of nutritional relationships using radiolabelling. Neither has there been any attempt to repeat the culture experiments by Stahl (1949) and earlier workers which failed to produce any definitive evidence of a benefit to either partner from the relationships. Indeed, it could well be that all the fungi hitherto isolated from hepatics are weak parasites colonizing older parts of the plant rather than those forming specific associations. By contrast to the wealth of ultrastructural data on mycorrhizas in vascular plants (Scannerini and Bonfante-Fasolo, 1983), which reinforce the notion of these as delicately balanced mutualistic associations, no details have yet been published of the fine structure of fungi in hepatics.

Over the past three years we have initiated a comparative study of British hepatics in an attempt to shed further light on the biological significance of their associations with fungi and explore how far they resemble vascular plant mycorrhizas. Light and electron microscopy reveals that different fungi occur in different groups of hepatics and that the associations involve a range of morphological specializations, all the more remarkable since hepatics are generally characterized as a group somewhat lacking in cellular differentiation. It now seems beyond all doubt that fungal associations have arisen independently on several occasions in different groups of hepatics and that the Class as a whole is predisposed in some way to form such partnerships. We tentatively suggest that one contributory factor may be the soluble carbohydrates found in hepatics. Many of these are common to fungi (Christie et al., 1985). In mosses such biochemical congruence is lack-

ing as are fungal associations.

The ultrastructure of the host/endophyte interfaces is closely similar to that in mycorrhizas. But, in hepatics the fungi are exclusively intracellular. This lack of spread between host cells is most likely related to the absence of intercellular spaces. No examples have yet been found of mycelium covering the external surface of an hepatic, nor are hyphae present in epidermal cells. Contact with the substratum is invariably via the rhizoids, thus suggesting that these may have a more active absorptive role than generally assumed.

In virtually all wild collections of hepatics it is possible to find hyphae in older axes. These have no obvious distribution and in most cases the hepatic cells are moribund or dead. Such infections are interpreted as incursions by weak parasites or saprophytes. They are very different from fungi restricted to specific regions of actively growing axes and will not be considered further. It should also be noted that healthy sporophytes and spores, gametangia, meristems, and gemmae, when released, are all free from intracellular fungi.

From our comparative studies we have discovered three very different kinds of fungal association.

Dikaryotic mycelia of basidiomycetes, with dolipore septa, but lacking clamp connections, form undifferentiated intracellular hyphal coils in the rhizoids and particular regions of the stems in many members of the Jungermanniaceae. These have also been found in scattered genera from other jungermannian families (e.g. *Marsupella*, *Saccogyna*, *Southbya*, *Ptilidium*) but in thalloid taxa are restricted to the Aneuraceae. Within the liverwort cells the hyphae undergo a cycle of digestion recalling that in the endotrophic mycorrhizas of orchids (Pocock and Duckett, 1984).

By contrast, in Marchantiales (except Ricciaceae) and *Fossombronia*, *Petallophyllum* and *Pellia* in the Metzgeriales, the fungi are morphologically very similar to those forming vesicular arbuscular mycorrhizas. They comprise large trunk hyphae giving off much-branched arbuscules (Pocock and Duckett, 1984).

In the third type of association the fungi are almost entirely restricted to the rhizoids (Pocock et al., 1984;

Pocock and Duckett, 1985). Hyphae proliferate in the rhizoid bases (Calypogeaceae) or in swollen apices (Cephaloziaceae, Lepidoziaceae and *Mylia anomala*, but not *M. taylori*).

The taxonomic distribution of the associations underlines their separate origins; basidiomycetes in Jungermanniales and Aneuraceae, arbuscule-forming fungi in Metzgeriales and Marchantiales and swollen rhizoids in two unrelated families, Lepidoziaceae and Cephaloziaceae. Also noteworthy is the absence of fungi from both primitive (Herbertaceae) and advanced families (Porellaceae, Jubulaceae, Lejeunaceae) in the Jungermanniales, the Anthocerotae and *Blasia*.

It is difficult to see any clear relationship between the presence of fungal endophytes and ecology except that species with rhizoidal fungi are almost exclusive to substrata rich in organic matter. Swollen rhizoids are most prominent on underground axes which have been recorded to depths of up to 20 cm in several species of *Cephalozia* and *Kurzia* (Pocock et al., 1984; Pocock and Duckett, 1985). Fungi tend to be absent from ephemeral (*Riccia*, *Sphaerocarpos*) and colonizing species (*Lophocolea*) but this is far from absolute; *Fossombronia* spp. from arable fields invariably contain an endophyte as do *Lunularia cruciata* and *Marchantia polymorpha* from greenhouse pots.

Although our ultrastructural studies are now yielding much interesting data on cellular peculiarities associated with the fungi (e.g. the presence of wall ingrowths where hyphae penetrate host cell walls in *Saccogyna*, *Lophozia*, *Tritomaria* and *Nardia*), parallel investigations on nutritional relationships have met with little success. Using spores, surface sterilized gemmae or gametophytic apices, it is relatively easy to produce axenic cultures of hepatics on standard agar media. We have, however, been unable to isolate a single fungus which would form a specific association when grown with the axenic hepatics, despite the use of a wide range of media, including those used to culture mycorrhizal fungi, liverwort extracts and sterilized soils. The latter at first sight appeared to be a promising line of approach, but as is also the case with fern gametophytes (Rubin and Paolillo, 1984) hepatics placed on autoclaved soils and their extracts rapidly die.

These problems underline the morphological evidence that hepatic/fungal associations are highly sophisticated. Considering the fact that the axenic

axenic culture of mycorrhizal fungi from vascular plants is still far from routine (Grellier et al., 1984; Smith, 1980), our failures to date on an untried system are perhaps not altogether surprising. In the continuing hope of synthesizing hepatic/fungal associations we have now turned to the alternative host hypothesis (e.g. the *Cryptothallus* endophyte may be one of the fungi forming mycorrhizas with *Betula* (Pocock and Duckett, 1984) and are growing hepatics raised axenically with a range of vascular plant mycorrhizas.

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Acknowledgements

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THE "MIXED COLLECTION HERESY"

A Review and Update

Robert Wyatt¹, David M. Lane²,
and Ann Stoneburner¹

OUR VIEWS on the use of mixed collections in bryophyte taxonomy have been expressed most fully in a paper in *Taxon* (Wyatt et al., 1982). Acting upon an invitation from the Editor, we present here a summary of our 1982 paper. In addition, we include some comments on recent developments that pertain to the interpretation and use of mixed collections in plant taxonomy.

Our 1982 paper pointed out that the use of mixed collections has become commonplace in moss taxonomy as a short-cut for more rigorous examination of the genetic basis of morphological characters. Proponents of this approach argue that closely-related but morphologically different plants growing intermixed must be experiencing the same environment. Therefore the morphs must be genetically distinct and can be treated as separate taxa (usually, as separate species). The method is simple in application and has been extended from field study of mixed populations to mere observation of mixed specimens in herbarium packets.

Obviously, there are serious problems with the logic and methodology of this approach. It ignores the possibility of microenvironmental variation and makes unreasonably restrictive assumptions about genetic variability in bryophyte populations.

We concluded that the mixed collection method should be abandoned entirely and that more rigorous experimental tests, such as uniform garden cultivation and reciprocal field transplants, should be used in its place.

Ironically, a paper advocating the use of mixed collections appeared in *Taxon* just three months after our publication. Wagner and Wagner (1983) called their method of comparing mixed stands of *Botrychium* the "genus community method". It is directly analogous to the "mixed collection method" of bryology. In addition, Wagner and Wagner (1983) described a related "mutual associates method" which holds that "the ability of two taxa to maintain their differences in separate habitats even though their mutually-associated companions stay alike", indicates their genetically-based distinctiveness as species.

These methods, especially the mutual associates method, which involves assumptions about genotypic and phenotypic differences between three species in two environments, are still subject to our earlier criticisms regarding environmental heterogeneity and genetic divergence.

From discussions with W. H. and F.S. Wagner, it is apparent that they advocate use of these techniques only with extreme caution and only in groups like *Botrychium* which are demonstrably difficult to grow or transplant. Their own analyses are always based on first-hand field observations, and interpretations are tempered by the results from other sources of evidence (e.g. cytological, palynological and biochemical).

We have also discussed our criticisms of the mixed collection method with several bryologists who have used the method in their own work. Some have admitted that it may have misled them in certain cases, but most remain unrepentant. Nevertheless, to our knowledge no coherent rebuttal of our arguments has been presented.

References

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2. 62 Oak St., Dover, NH 03820, USA.

TECHNIQUES NOTEBOOK*

Investigation of bryophytes
with the
fluorescence microscope

By Gisela Nordhorn-Richter

MANY PHENOLIC COMPOUNDS show primary fluorescence after radiation with light of short wavelength. In higher plants as well as in bryophytes different compounds with phenolic groups can be identified (e.g. phenolic-acids, flavonoids and lignin - to name only some of them). Using a fluorescence microscope these compounds can be localized in the cells directly.

Instrument is possible, but mostly it would not have sufficient light intensity. Light is given by a mercury-vapour lamp (50 Watts). The common fluorescence microscopes have filter sets for violet radiation with an excitation filter of 350-410 nm and a barrier filter of 455 nm. For blue light radiation the excitation filter is 450-490 nm and the barrier filter is 515 nm. Best results for bryophytes are given by blue light radiation.

Fresh bryophyte material as well as old herbarium material can be investigated.

Fresh material: Material without chlorophyll can be investigated without further preparation. Material with chlorophyll shows an intense red fluorescence of the chlorophyll. Before examining the yellow-green to whitish-blue fluorescence of the phenolic compounds you have to extract the chlorophyll with 80% acetone. Small bryophytes can be treated on the microscope slide directly, but often the material must stay in acetone overnight.

* Column Editor, Professor Janice M. Glime.

Old herbarium material: When chlorophyll is destroyed, you can investigate directly in water, and it is often advantageous to heat the preparation over a candle to expel air from the dried material. It is also possible to investigate permanent slides. Here you must pay attention to interpreting the results for the embedding material itself often contains phenolic compounds. Also there may be some background fluorescence.

For photomicrographs you have to increase the sensitivity of the film by 9/10 DIN. (The preparation is very luminous, the background black.) Both daylight and artificial light-films can be used. Daylight films show the true colours.

Coloured pictures of primary fluorescence in bryophytes have recently been published (Nordhorn-Richter, 1983) and reprints of the paper are available on request to the author.

Reference

Nordhorn-Richter, G. 1983. Primäre Fluoreszenz bei Moosen. Leitz-Mitteilungen, 157: 167-170.

FB.6. Botanik, Universität-Gesamthochschule Duisburg, Lotharstrasse 65, 4100 Duisburg 1, B.R.D.

Column Editor's Note: Dr. Nordhorn-Richter demonstrated this method in Praha, and showed how it can make the bulbils of *Pohlia* spp. far more visible. Since then, I have examined several genera and find a variety of cell wall colors, the most striking being green walls in *Sphagnum*. I wonder if use of DMSO instead of acetone for chlorophyll extraction will improve this process for larger or less permeable mosses?

OUT AND ABOUT

In the People's Republic of
China

By Pan-cheng Wu

IN CHINA, there was activity in almost all fields of bryology in 1984. The main projects related to the bryoflora of Hengduan Mt. and Najabawa Mt., SE Tibet, which are being studied seriously. The former project, which includes NW Yunnan, SW Sichuan, and SE Tibet, will be compiled by people working at the Institute of Botany, Academia Sinica and Kunming Institute of Botany and should be finished in two years' time. However, Kunming Institute of Botany is also in charge of the latter project, which will be compiled in 1985.

A unique bryological meeting was held in Shanghai to talk about a textbook of bryobotany, which is to be the responsibility of Shanghai Normal University. Almost all participants were teachers.

Prof. Paul L. Redfearn, South-West Missouri State University, came here again with three other U.S. botanists. Two young Chinese bryologists from the Institute of Botany, Peking, and Kunming Institute of Botany, Academia Sinica, co-operated with Prof. Redfearn on Caisan Mt., W. Yunnan. This is the second Sino-American Botanical Expedition in China, and lasted for two months when about 4,000 bryophyte specimens were collected. As well "The checklist of Chinese mosses", which results from co-operation between Chinese bryologists and U.S. bryologists is nearing completion. Almost 300 taxa will be added in it. Formerly the estimated number of Chinese mosses was only 2,000 taxa. The other expeditions took place in SW China, MS China, SE China and NE China. A third trip to Hainan Isl., S. China, started in the middle of November with four institutions joining the expedition.

Recently, two Chinese bryologists have returned to China after 1-2 years' stay at the herbarium in Helsinki, co-operating with Dr. T. Koponen. Revisions of Chinese Fissidentaceae, Mniaceae and Pottiaceae were completed or are being finished by them. Another three Chinese bryologists have gone to Finland, Canada and Japan. The trend is for more and more Chinese bryologists to go abroad for checking the types of Chinese bryophytes and gain training and experience with other floras.

A very interesting piece of news is that a medical doctor, Dr. Z.F. Chen, the daughter of the founder of Chinese bryology, the late P.C. Chen, accepted an invitation to work in the Tokyo

Desiderata

I WOULD BE GRATEFUL to receive samples of fruiting material of the following *Philonotis* species collected from any locality in the Northern Hemisphere:-

Philonotis capillaris
(My amended diagnosis of this species* includes the *Philonotis arnellii* forms.)

P. caespitosa
P. marchica
P. seriata

J.H. Field, 34, Wells Green Road, Solihull, West Midlands, England.

(* Proc. Birmingham Nat. Hist. Soc., 23(2): 104, 1976, Ed.)

Exchange Available

TWO SETS of 100 identified and labelled Veracruz mosses are available in exchange for bryophytes, preferably of tropical origin. Specimens from eastern North America would also be welcome. Duplicate sets have already been sent to MEXU, ENCB, NY, B. & MO.

Efrain De Luna G. Instituto Nacional de Investigaciones sobre recursos bióticos, Apdo. Postal 63 (INIREB), KM. 2.5, Antigua Carretera a Coatepec, 91000 Xalapa, Veracruz, Mexico.

Women's Medical College for a period of five months. She has met Dr. S. Hattori and Dr. H. Inoue and realized the wish of her father to strengthen relationships between China and Japan.

About ten papers have been published dealing with taxonomy, phytogeography and terminology. "The bryoflora of Xizang (Tibet) China", which will include more than 800 taxa of mosses and hepatics, will be available soon. A handbook entitled "A glossary of terms and names of bryophytes" in Chinese and Latin is also being published, in which more than 1,000 glossary items and several thousands of names will be included. Spore morphology, sporeling morphology and chromosome numbers are also being studied.

Along with the establishment of the new herbaria of Kunming Institute of Botany and Institute of Botany, Peking, several other new herbaria are being designed, e.g. for the Institute of Forestry and Pedology, South China Institute of Botany, Nanking Botanical Garden and elsewhere. Now the new bryophyte herbarium of Kunming Institute of Botany is in good order. But, at the Institute of Botany, Peking, the bryophyte herbarium still will not be open to the public until probably the summer of 1985, due to more than ten moves during the past 15 years!

In conclusion, I would like to announce that the new address of Dr. M.X. Zhang is the "Xian Botanical Garden, Xian, China". Bryologists interested in contacting her should please write to her directly at Xian.

Institute of Botany, Academia Sinica, 141 Hsi Chih Men Wai Ta Chie, Peking, China.

Membership of IAB

THE FOLLOWING LISTS, for the period 1 November 1984 - 31 January 1985, up-date those already published. The last list appeared in *Bryol. Times*, 30:2.

New Members

Aguirre, Jaime; Battershall, G. H.; Blackstock, T. H.; de la Cerda, Inigo Granzow; Cramer, J.; Curtis, C.; Fisk, R.J.; Godfrey, M.F.; Kristensson, Gerhard; Libbey, R.P.; Lindsay, D.; Manning, S.A.; Millon, Georges; Murphy, Matt; Stanley, Philip E.; Stoneburner, Ann; Webster, Harold J.

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IAB Council Meeting

IT IS ANNOUNCED that there will be a meeting of the IAB Council during the IAB Conference on Bryocology in Hungary, August, 1985. Any member wishing to bring a topic before Council should write to the undersigned by 31 May, 1985.

S.R. Gradstein, Hon. Secretary, International Association of Bryologists, Instituut voor Systematische Plantkunde, Heidelberglaan 2, 3584 CS Utrecht, The Netherlands.

Personalia

Dr. DOMINICK BASILE of the Department of Biological Sciences, H.H. Lehman College of CUNY, Bronx, New York 10468, U.S.A., took over the editorship of the *Bryologist* with effect from the beginning of 1985.

MASANOBU HIGUCHI, Hiroshima University, successfully presented a thesis entitled "a revision of the genus *Gollania* Broth. (Musci)", and obtained a D.Sc. degree from Hiroshima University (Chairman of the investigation committee: Prof. H. Ando). His next bryological work is a revision of the genera *Glossadelphus*, *Platygyriella*, *Platygyrium* and *Pylaisiella*.

Dr. AUNE KOPONEN (Curator of HSI) and Dr. Timo Koponen will travel in China in July-August, 1985, and visit Japan in September. In China field work will be carried out on Hainan Island and in Yunnan, and visits made to several herbaria. Their trip is being arranged through the exchange programme between Academia Sinica and the Finnish Academy.

Mrs. JIAN-SHING LOU from the Institute of Botany, Academia Sinica, Beijing, will stay in Helsinki until 14 June 1985. She is studying the bryophyte flora of Wo-long Nature Reserve of Sichuan Province with Dr. T. Koponen. Her extension of stay has been financed by the Finnish Academy.

KOUJI UNE, Hiroshima University, has successfully presented a thesis with the title "Sexual dimorphism in the Japanese species of the genus *Macromitrium* Brid." and obtained a D.Sc. degree from Hiroshima University (Chairman of the investigation committee: Prof. H. Ando). He will continue and develop his work on sexuality of bryophytes through culture study.

Retirement of two Japanese Professors

Dr. H. ANDO retired as Professor of Botany from Hiroshima University on the 31st March, 1985. He is, however, continuing with his bryological work as a full-time Professor at Elisabeth University of Music as from the 1st April. His new address is: Elisabeth University of Music, Nobori-cho 4-15, Naka-ku, Hiroshima 730. Professor Ando's home address is: Kurakake 3-chōme, 43-2, Kōyō-cho, Asakita-ku, Hiroshima 739-17, Japan.

In commemoration of Prof. Ando's retirement, a special issue of *HIKOBIA*, Journal of the Hiroshima Botanical Club, is under preparation, which will appear as *HIKOBIA* Vol. 9, No. 4, in July, 1986.

Dr. S. INOUE retired as Professor from Kumamoto University as of the 31st March, 1985. He is also going ahead with his cytological work with bryophytes at Kumamoto University. Correspondence as from the 1st April should be sent to the same address as before.

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Future Meetings

ICSEB III Brighton, 1985

THE THIRD INTERNATIONAL Congress of Systematic and Evolutionary Biology, to be held at the University of Sussex, Brighton, England, 4-10 July, 1985, will feature a symposium on bryophyte phylogeny: Origin and Relationships of the major groups. A series of specialists will consider how far the diversity of recent evidence contributes towards the formulation of a coherent theory of bryophyte evolution. Speakers and topics to be included are:

Barbara Crandall-Stotler, Carbondale, (data from morphology and anatomy).

J.G. Duckett, London (ultra-structure).

M.E. Newton, Manchester (cytology).

Y. Asakawa, Tokushima (comparative phytochemistry).

A.J.E. Smith, Bangor (validity of conclusions drawn from the evidence currently available).

The symposium is being organized by Dr. R.E. Longton on behalf of the British Bryological Society and the papers will be published in *Journal of Bryology*. An earlier notice appeared in *Bryol. Times*, 27:8, 1984.

Numerical Methods in the Study of Vegetation Systems

Place: International School of Vegetation Science, Swiss Federal Institute of Technology, Room D3.2, ETH-Zentrum, 8096, Zürich, Switzerland.

Dates: 19-30 August, 1985.

Course structure: Ten full days of instruction are planned, including lectures, practicals, tutorials, workshops and field trip. The lectures present up-to-date, in-depth accounts of data analysis. The practicals introduce the participants to the use of personal and main frame computers, hardware and software, as aids in the solution of representative problems. The tutorials cover basic mathematics and computer programming. The workshops demonstrate useful program packages. Sampling problems and other topics of interest in field studies are discussed on the field trip. The main language of instruction is English.

For further information and registration form, write to Dr. O. Wildi, Eidg. Anstalt für das forstliche Versuchswesen, CH-8903 Birmensdorf, Switzerland.

FIRST BLOMQUIST BRYOLOGICAL FORAY - OCTOBER 4-6, 1985

Roan Mountain State Park, Tennessee

THE FIRST of what we hope will be a continuing series of bryological forays in the Southeastern United States, is being organized by Brent Mishler and Lewis Anderson of Duke University, with the assistance of A. J. Sharp and David Smith of the University of Tennessee. It is appropriate that the foray be named after Hugó L. Blomquist (1885 - 1964), in honor of his many early contributions to knowledge of the bryophytes (and many other groups of plants) of the region.

Roan Mountain, alt. 6,267 ft., straddles Mitchell Co., North Carolina - Carter Co., Tennessee; the high ridge being the line. The Appalachian Trail extends along the ridge. A Spruce-Fir forest covers the peak and the area is famous for grassy and heath balds, below which are Oak-Chestnut and Oak-Hickory-Pine zones. Rich Appalachian cove forests are in the narrow valleys. The mountain and adjacent areas support a rich bryophyte flora. Upland bogs are within easy driving distance and will also be visited.

We will gather on Friday evening, the 4th. Trips will be made to the various habitats all day Saturday and in the morning on Sunday. We have reserved cabins at the state park for the nights of the 4th and the 5th. Each cabin sleeps 6, and is equipped with sheets, towels, a kitchen, and cookware. Food will be the responsibility of the participants; the kitchens can be used, or a restaurant is available nearby with reasonable prices. The total cost for lodging for two nights and refreshments on Friday and Saturday evenings will be \$25.00. Some of the rooms in the cabins have two twin beds, the others have one double bed, so if you want a room to yourself, the cost will have to be \$45.00 for the two nights plus refreshments.

Camping is available at the park for \$5.00 per night with tents, or \$7.75 per night with a trailer (arrangements to be made by the participant on arrival). For those camping, or those who make their own arrangements for motel rooms (available nearby in the town of Roan Mountain, Tennessee), the total

cost of the foray will be \$5.00 to cover refreshments.

If there is enough interest we may hold one cabin for students (and other hardy types who don't mind sleeping on the floor). The cost for lodging will be lower, the amount depending on how many want to do this. Each individual would need to supply a towel, sleeping bag and pad of some sort. If interested, please inform us soon. We can set a price once we know how many are in this category.

Space in the cabins is limited and will be assigned on a "first come, first served" basis. We will send further details to all those who make reservations. Anyone interested in bryophytes is welcome; beginners will find the foray educational, professionals will find it a good chance for informal interchange and some good collecting. All should have a good time in a wonderful location. To reserve a place on the foray, please contact Dr. Brent Mishler, Dept. of Botany, Duke University, Durham, N.C. 27706, as soon as possible.

BRYOLOGICAL SOCIETIES

AND

WORKING GROUPS

By Brian O'Shea

* = Working Group

American Bryological and Lichenological Society (ABLS)

Sec.: Dr. Barbara Crandall-Stotler, Department of Botany, Southern Illinois University, Carbondale, IL 62901, U.S.A.

Membership: 463 (Apr. 1984)
 Year of formation: (1898) 1949
 Publications: The Bryologist,
Evansia
 Meetings/year - field: 2,
 Scientific 1
 Regions covered: USA, Canada

* Australasian bryological working group (ABWG)

(An informal association of Australasian bryologists linked by the Australasian Bryological Newsletter.)

Contact: Dr. H.P. Ramsay, Dept. of Botany, University of New South Wales, Kensington 2033, NSW, Australia.

Membership: c. 25 Australasian subscribers to Newsletter
 Year of formation: 1977
 Publications: Australasian Bryological Newsletter
 Meetings/year - field: none
 Scientific: none
 Regions covered: Australasia

British Bryological Society (BBS)

Sec.: Dr. Royce Longton, Dept. of Botany, University of Reading, Whiteknights, Reading RG6 2AS, U.K.

Membership: 508 (Sept. 1984)
 Year of formation: (1896) 1923
 Publications: Bulletin of the British Bryological Society,
Journal of Bryology
 Meetings/year - field: 3
 Scientific: 1
 Regions covered: England, Scotland, Wales, Ireland

Bryological Society of Japan (BSJ)

Sec.: Dr. Hiroshi Inoue, National Science Museum, Hyakunin-cho, Shinjuku-ku, Tokyo, Japan.

Membership: c. 375
 Year of formation: 1972
 Publications: Proceedings of the Bryological Society of Japan
 Meetings/year - field: 3
 Scientific: 1
 Regions covered: Japan

* Bryologische-Lichenologische Arbeitsgemeinschaft für Mitteleuropa (BLAM)

Sec.: Dr. G. Philippi, Landes-sammlungen für Naturkunde, Erb-

prinzenstrasse 13, D-7500 Karlsruhe 1, B.R.D.

Membership: c. 250
 Year of formation: 1968
 Publications: Herzogia
 Meetings/year - field: 1,
 Scientific: none
 Regions covered: Central Europe
 Germany/Austria

Bryologische en Lichenologische Werkgroep KNNV BLW (see DBLWG)* Central and East European Bryological Working Group (CEBWG)

Contact: (Representing the coordinating committee of :
 Drs. Grolle, Pócs, Szweykowski, Váňa) Dr. T. Pócs, Dept. of Taxonomy, Research Institute for Botany of the Hungarian Academy of Sciences, H-2163 Vácraót, Hungarv.

Membership: c. 125
 Year of formation: 1978
 Publications: Proceedings of Meetings
 Meetings/year - field/scientific: 1 every 2 years
 Regions covered: Central & East Europe.

* IAB Committee for Tropical Bryology (CTB)

Sec.: Dr. Claudio Delgadillo, Instituto de Biología, Universidad Nacional Autónoma de México, Apartado Postal 70-233, 045100, México D.F.

Membership: 6 committee members
 Year of formation: 1982
 Publications: none
 Meetings/year - field: none
 Scientific: none
 Regions covered: The tropics

Dutch Bryological and Lichenological Working Group (DBLWG)

Sec.: Dr. Peter Hovenkamp, Eibe-roord 3, 2317 XL Leiden, Netherlands (see also KNNV).

Membership: 250 (August 1984)
 Year of formation: 1946
 Publications: Lindbergia (jointly with NBS) and Buxbaumella
 Meetings/year - field: 2
 Scientific: 1
 Regions covered: The Netherlands

Indian Bryological Society (IBS)

Sec.: Dr. S.C. Srivastava, Dept. of Botany, University of Lucknow, Lucknow 226007, India.

Membership: 63 (May 1984)
 Year of formation: 1984
 Publications: none
 Meetings/year - field: none
 Scientific: none
 Regions covered: India

International Association of Bryologists (IAB)

Sec.: Dr. S.R. Gradstein, Instituut voor Systematische Plantkunde, Heidelberglaan 2, 3584 CS Utrecht, The Netherlands.

Membership: c. 400

Year of formation: 1969

Publications: Advances in Bryology, The Bryological Times.

Meetings/year: field/scientific: 1 every 2 years

Regions covered: Worldwide

Koninklijke Nederlandse Natuurhistorische Vereniging/Bryological and Lichenological Study Group (KNNV)

(see DBLWG)

Nordic Bryological Society (NBS)

Sec.: Botanical Museum, University of Copenhagen, Gothersgade 130, DK-1123 Copenhagen K, Denmark.

Membership: c. 200
 Year of formation: 1967
 Publications: Lindbergia (jointly with DBLWG)
 Meetings/year - field: 1
 Scientific: none
 Regions covered: Denmark, Finland, Iceland, Norway, Sweden

* Organisation for the Phytotaxonomic investigation of the Mediterranean Area: Bryophyte Working Group (OPTIMA - BWG)

Sec.: Dr. J. Herrnstadt, Dept. of Botany, Hebrew University of Jerusalem, Israel.

Membership: c. 10 committee members
 Year of formation: 1979
 Publications: none
 Meetings/year - field: none
 Scientific: none
 Regions covered: Mediterranean

* Polish Bryological Society (PBS)

Sec.: Dr. Mirosława Bloch, Inst. of Biology, Maria Curie-Skłodowska Univ. 20-033 Lublin, Akademicka 19.

Membership: ? 50
 Year of formation: 1978
 Publications: none
 Meetings/year - field: none
 Scientific: none
 Regions covered: Poland

Sociedad Latinoamericana de Briología (SLAB)

Sec.: Dr. G.G. Hässel de Menéndez, Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Avda. A. Gallardo 470, 1405 Buenos Aires, Argentina.

Membership: 48 (August 1984)
 Year of formation: 1982
 Publications: Briolatina
 Meetings/year - field: none
 Scientific: none
 Regions covered: Latin America

Swiss Bryological and Lichenological Society (SBLs)

Sec.: Dr. K. Ammann, Syst.-Geobot. Institut, Altenbergrain 21, CH-3013, Bern, Switzerland.

Membership : c. 150
 Year of formation: 1956
 Publications : none
 Meetings/year - field: 3
 scientific: 1
 Regions covered: Switzerland
 *Vlaamse Werkgroep Bryologie
 (VWGB)

Sec.: Ludo Smets, Alb. van Dijk-
 straat 13, B-2300 Turnhout,
 Belgium.

Membership: c. 70 (+ 13 inst.)
 Year of formation: 1978
 Publications: Muscillanea
 Meetings/year - field: 3-5
 scientific: 0-2
 Regions covered: Belgium

* Working Group for Mapping
 Bryophytes in Europe (WGMBE)

Sec.: Prof. R. Schumacker, Uni-
 versity of Liege, Station Sci-
 entifiques des Hautes-Fagnes,
 Mont-Rigi, B-4898 Robertville,
 Belgium.

Membership: c. 75
 Year of formation: 1980
 Publications: none
 Meetings/year - field/scienti-
 fic: 1 every 2 years
 Regions covered: Europe

131 Norwood Rd. London SE24 9AF
 England, U.K.

PUBLICATION
 ANNOUNCEMENTS
 Nova Hedwigia

PROF. DR. W. FREY, Institut für
 Systematische Botanik und Pflan-
 zengeographie, Altensteinstr. 6,
 D-1000 Berlin 33 (Dahlem) has ta-
 ken over the editing of the bryo-
 phyte and pteridophyte parts
 of this serial. Manuscripts
 for consideration for Nova Hed-
 wigia may be sent directly to
 Dr. Frey or to Herr J. Cramer,
 In Den Springaeckkern 2, D-3300,
 Braunschweig, B.R.D.

Hikobia

VOLUME 9, Nos. 1 & 2 (July 1984)
 have been published in one co-
 ver and are available from Hi-
 kobia-kai, c/o The Botanical
 Institute, Faculty of Science,
 Hiroshima University, Higashi-
 senda-machi, Hiroshima 730, Ja-
 pan. Payment of 6,000 yen
 must be in Japanese currency,
 only by international postal
 money order. Nine bryological
 articles are included in this
 issue.

Until now, Hikobia (the
 journal of the Hiroshima Bota-
 nical Club) has been published
 on an irregular basis. How-
 ever, starting with Volume 9,
 No. 3, 1985, it will be pub-
 lished annually. Therefore
 it will be available on a sub-
 scription basis for 4,000 yen
 per year. Back issues are av-
 ailable; prices on request from
 Dr. Zen Iwatsuki, Hiroshima Univ.

Two Recent IAB Publications

Advances in Bryology

Vol. 2

Contents: STEER, M.W. Mitosis in
 bryophytes; MUHLE, H. Moose als
 Bioindikatoren: OLIVER, M.J. &
 J. D. Bewley. Desiccation and
 ultrastructure in bryophytes;
 ANDO, H. & A. MATSUO. Applied
 bryology.

Special price to all fully paid
 up members of IAB.

Index Hepaticarum

Vol. 10

Lembidium to Mytilopsis
 P. Geissler and H. Bishler
 (Editors)
 Vaduz, J. Cramer, 352 pp.
 Hardcovers

Subscription price and price to
 IAB members DM 120, otherwise
 DM 150.

Both works are available from J. Cramer, Verlag, In den Spring-
 aeckkern 2, D-3300 Braunschweig, B.R.D. In view of the 7-year
 gap since the last volume of Index Hepaticarum appeared, anyone
 with a standing order for the series, and who has not received
 a copy, should take up the matter through their local bookseller.

OTHER PUBLICATIONS

Briolatina, No. 5: 1-8, 1985.

Bryo. Bibl., 26: 1-228, 1984.

Bull. Brit. Bryol. Soc., No. 45:
 1-28, 1985.

Buxbaumiella, No. 16: 1-60, 1984.

Crypt. Bryol. Lichen., 5 (4):
 333-424, 1984.

Novit. Syst. Plant. non Vasc.,
 21: 1-216, 1984.

Crandall-Stotler, Barbara. (Comp.)
 1984. Directory. The Ameri-
 can bryological and licheno-
 logical Society, Inc. Carbon-
 dale, Ill. A.B.L.S. 27pp.

This is the current membership
 list of the A.B.L.S. It gives, in
 addition to the alphabetical list
 of names and addresses of the ca.
 460 members, a geographical in-
 dex to State or Country of domi-
 cile, a list of current officers,
 members of the Executive Commit-
 tee and editors, as well as the
 names of previous holders of these
 posts back to 1949.

DE ZUTTERE, Ph. & R. SCHUMACKER,
 1984. Bryophytes nouvelles,
 méconnues, rares, menacées ou
 disparues de Belgique.
 Pubs. Service Conserv. Natur.
 No. 13: 1-160, with 40 maps.

A total of 308 out of the 662 bryo-
 phyte taxa accepted as occurring
 in Belgium are treated in this
 work. Of those covered, 60 are
 considered new to the country
 since 1969, while 59 formerly
 thought to have been extinct have
 been refound. Information recor-
 ded for each taxon includes its sta-
 tus in Belgium, its habitat, its
 phytogeographical category, its
 distribution within the country
 with grid reference(s) and, for
 some, brief remarks regarding
 taxonomy, threat to habitat, etc.

Sadly the quality of the
 printing does no justice to the
 mass of meticulously-assembled
 data packed in between the cov-
 ers.

IRELAND, R.R. & LINDA M. LEY,
 1984. Type specimens of bryo-
 phytes in the National Mus-
 eum of Natural Sciences, Na-
 tional Museum of Canada.
 Syllogeus, No. 47: 3-69.

The data in this well laid-out
 work are arranged in two alpha-
 betical series. The first
 lists the type specimens in the
 John Macoun herbarium, most of
 which were described by N.C.
 Kindberg, while the second in-
 cludes types from all other
 sources. A total of 848 moss
 and 86 liverwort taxa are listed
 with information on the basionym,
 the authority(ies), reference
 to the place of publication of
 the protologue, the kind of
 type(s), the label data, the
 CANM accession number and the
 currently-accepted name.

KENT, D.H. & D.E. ALLEN, 1984.
 British and Irish herbaria.
 An index to the location of
 herbaria of British and Irish
 Vascular Plants. London, Bo-
 tanical Society of the Bri-
 tish Isles, c/o British Mus-
 eum (Natural History), 333pp.
 Price: £12.00. Available
 from BSBI Publications, Oun-
 dle Lodge, Oundle, Nr. Peter-
 borough, England.

The chief interest of this work
 for bryologists lies in the in-
 formation it gives about c. 630
 Institute herbaria, many of
 which also have collections of
 bryophytes. Details of impor-
 tance are the acronyms of the
 herbaria (all conforming to the
 practice of Index herbariorum)
 their titles and addresses, as

well as the full names and dates of collectors and the location of their material. A list of private herbaria is also included. The book ends with a 15pp. bibliography of works relating to herbaria and collectors and includes much of value to bryologists.

VÁŇA, JIŘÍ (ed.), 1984. Proceedings of the third meeting of the bryologists from central and east Europe, Praha, 14th-18th June, 1982. Praha, Univerzita Karlova, 352pp. with many figs.

This meeting was attended by some 50 delegates from 12 European countries, Japan, Canada, and the U.S.A. The 27 papers presented covered such topics as: biosystematic and chemical studies in hepatics, sporophyte development, spore morphology and germination in hepatics, taxonomic revisions of various hepatic genera and families, distribution and mapping of bryophytes in Europe, a checklist of the mosses of SE Tropical Africa, an historical review of Chinese bryology, moss bulbils under the fluorescence microscope, and aspects of the physiology of diurnal drought tolerance in *Tortula ruralis*. Three of the contributions are summaries only as they are published elsewhere.

Copies of the Proceedings are available in exchange for reprints or herbarium specimens from: Dr. J. Váňa, Katedra Botaniky Nižšího Rostlin Přírodovědecké Faculty, Univerzity Karlovy, 128 01 Praha 2, Benátská 2, Czechoslovakia.

INOUE, H. (ed.), 1984. Studies on cryptogams in southern Chile. Tokyo, Keneisha Ltd. 176pp. with many figs. and plates. Sole distributor Maruzen Co. Ltd. (Export Dept.), P.O. Box 5050, Tokyo International, 100-31 Japan. Price US \$ 45.

This publication presents part of the results of the Tokyo National Science Museum's Expedition to southern Chile in 1981. Written in English, each paper has an English and Spanish summary. Five are about bryophytes (all except 1 on hepatics), 1 on lichens, 2 on fungi and 1 on vegetation types.

The object of the expedition was to collect data for a "comparison of the speciation modes of cryptogamic plants in the Andes of South America and in Asia" and the results are an attempt to detect Asiatic affinities. Few such affinities appear to have been found as the text is confined to straightforward, well-illustrated taxonomic accounts of the material collected. Some new species are described and oil body characteristics, chromosome counts and chemical data are presented for a range of Chilean hepatics.

BISCHLER, H. 1984. *Marchantia* L. The New World Species. *Bryophytorum Bibliotheca*, 26: 1-228, with 46 figs. Price DM 60.

Apart from the virtually cosmopolitan *Marchantia polymorpha*, which has been the subject of much study, little is known of the 300 or so other taxa described for the genus, due to the lack of a worldwide monograph. The present study seems to be the start of such a work and recognises just 9 species from the Americas, using a "very broad" species concept. Three keys are provided, viz., to sterile plants, to plants with antheridiophores, and to plants with archegoniophores. The descriptions are detailed, with good illustrations, characters being based on light microscope and SEM studies of organs and spores. Mitotic counts were obtained from thalli in cultivation. The problem of infra specific variation is discussed, but none are recognised. A list of specimens examined is included, but surprisingly there is no summary or abstract of the author's conclusions.

DATES OF PUBLICATION

DR. R. GROLLE OF JENA has written to say that he would like to see the precise dates of publication of books and articles, not readily available elsewhere, recorded in *The Bryological Times*. He points out that the need is as great for recent publications as for those of earlier times and suggests that a regular column might be established. He has sent the following information. Ed.

Clarke, G.C.S. & J.G. Duckett, 1979. *Bryophyte systematics*. (Systematics Association Special Volume 14). Issued December 1979. Source of data: letter from G.C.S. Clarke to R. Grolle, dated 29 May, 1984.

Schuster, R.M., 1966-1980. *The Hepaticae and Anthocerotae of North America east of the hundredth meridian*. Vol. 1 issued 24 October, 1966; Vol. 2 issued 21 November, 1969; Vol. 3 issued 5 April, 1974; Vol. 4 issued 25 November, 1980. Source of data: letter from Colombia University Press Publicity Director to W.C. Steere, dated 3 August, 1983.

Schuster, R.M. 1983-1984. *New manual of bryology*. Vol. 1 issued 24 December, 1983; Vol. 2 issued 18 February, 1984. Source of data: letter from S. Hattori to R. Grolle, dated 18 May, 1984.

R. Grolle, DDR-69 Jena, Kernbergstr. 59-511-48, G.D.R.

The views of readers would be welcomed on the problem of precise dates of issue. Ed.

NAMES AND ADDRESSES OF

COLUMN EDITORS

Computer Techniques:

Column Eds. Dr. J.-P. Frahm, Botanik, Universität Gesamthochschule Duisburg, Postfach 10 16 29, D-4100 Duisburg 1, B.R.D. Mr. B.O'Shea, 131, Norwood Road, London, SE24 9AF, England, U.K.

Nomenclature Column:

Column Ed. Drs. Gea Zijlstra, Instituut voor Systematische Plantkunde, Heidelberglaan 2, 3584 CS Utrecht, The Netherlands.

Research and Development:

Column Eds. Dr. R. Mues, Fachrichtung Botanik, Fachbereich 16 der Universität des Saarlandes, 6600 Saarbrücken, B.R.D. Prof. J.G. Duckett, Department of Plant Biology & Microbiology, Queen Mary College, University of London, Mile End Road, London E1 4NS, England, U.K.

*Taxonomic column:

Column Eds. Prof. D.H. Vitt, Department of Botany, University of Alberta, Edmonton, Canada T6G 2E9. Dr. J. Engel, Field Museum of Natural History, Roosevelt Road, at Lake Shore Drive, Chicago, Illinois 60605, U.S.A.

Techniques Notebook:

Column Ed. Prof. Janice M. Glime, Department of Biological Sciences, Michigan Technological University, Houghton, Michigan 49931, U.S.A.

Articles for any of the above columns should be sent direct to the column editors who will forward the material for publication after editing.

* title not yet finalized.

DIARY

For explanation of acronyms, see *Bryol. Times*, 31: 7-8.

April 17-24. BBS. Chichester, West Sussex. Spring Field Meeting. Local Sec.: Mr. R.C. Stern, Botany Bay, Main Rd., Fishbourne, Chichester, West Sussex, PO 18 1AB. For details see *Bull. BBS* 44 & 45: 16.

April 20-21. BLAM. Gebiet Bergstrasse-westlicher Odenwald. Leader: G. Schwab. Further details from G. Philippi, Erbprinzenstr. 13, Karlsruhe, B.R.D.

April 20-21. SBLS. Valais Central (around Sion) [Central Wallis better.] Annual Assembly with paper-reading sessions and excursions. Further details from: K.A. Ammann, Syst.-Geobot. Institut, Altenbergrain 21, CH-3013, Bern, Switzerland.

(Diary continued)

April 27-28 DBLWG Spring excursion around Weert. Details to be announced.

June 10-14. AETFAT St. Louis. Symposium on Systematics and floristics of African Bryophyta on Friday 14th. Further information from Dr. R.E. Magill, AETFAT Secretariat, Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166, U.S.A.

June 30-6 July. NBS. Annual Meeting and Field Excursion, Knaben, Vest-Agder, SW Norway, Local Sec.: Arne Pedersen, Snippen 7F, N-0566, Oslo 5, Norway. Further information from A. Pedersen.

July 4-10. Brighton, England. Third International Congress of Systematic and Evolutionary Biology. Bryophyte symposium in collaboration with the BBS. See Bryol. Times, 27: 8 & 31:6.

July 21-23. BSJ. Daisenji, Japan. Paper-reading and field meeting. Further details from: Prof. H. Ochi, Biol. Inst., Faculty of Education, Tottori Univ., 101, Minami 4-chome, Koyama-cho, Tottori 680, Japan. For preliminary details, see Bryol. Times, 29:6.

July 28-4 Aug. BBS. Bavarian Alps. Summer field meeting. Local Sec.: Prof. Dr. R. Düll, Lehrstuhl f. biologie (Botanik), D. Pädagog. Hochschule, 4100, Duisburg 1, Lotharstrasse 65, B.R.D. Mr. A.R. Perry, Dept. of Botany, National Museum of Wales, Cardiff CF1 3NP, has agreed to co-ordinate bookings for participants from Great Britain.

Aug. 2-4. BLAM. Harz Mtns. Leader: W. Heimhold. Further information from W. Heimhold, Rottenweg 4, 3394 Langelsheim 1, B.R.D.

Aug. 5-10. IAB. Budapest and Vác-rátót. Conference on Bryoecology. For 3rd circular, see Bryol. Times, 30:9.

Aug. 5-11. SBLs. Field work in Engelberg (northern Alps). Further information from: Dr. K.A. Ammann, Syst.-Geobot. Institut, Altenbergrain 21, CH-3013, Bern, Switzerland.

Aug. 10-14. ABLs. Gainesville, Florida. For details see Bryol. Times, 30:3. Further information from: Dr. Norton G. Miller, New York State Museum Science Service, State Education Department, Cultural Education Center, Albany, New York 12230, U.S.A.

Aug. 12-14. CEBWG. Eger, Hungary. 4th Biennial Meeting. For 2nd circular, see Bryol. Times, 30:9.

Sept. 16-21. Edinburgh, Scotland. 2nd Symposium on plant life in SW Asia. For preliminary details of bryological programme, see Bryol. Times, 27:8.

Sept. 21-22. BBS. Paper-reading Meeting and AGM. National Museum of Wales, Cardiff. Local Sec.: Mr. A.R. Perry, Department of Botany, National Museum of Wales, Cardiff CF1 3NP. Preliminary details in Bull. BBS, 45:17.

Sept. 20-22. 4th Midwestern bryological Foray, Cusino Lake Field Station of Northern Michigan University. Professionals, students and amateurs are cordially invited to participate. Further information from Dr. Maynard Bowers, Department of Biology, Northern Michigan University, Marquette, Michigan 49855, U.S.A.

Sept. 20-22. Tenth Annual LeRoy Andrews Foray. Craftsbury Center, northern Vermont. Further details from Nancy Slack, Russell Sage College, Troy, New York, U.S.A.

Oct. 4-6 First Blomquist bryological Foray, Roan Mtn. State Park, Tennessee. For further information see this issue p.6.

Oct. 31 - 3 Nov. WGMBE Mont-Rigi. 3rd Meeting of Lectures and field work in Hautes Fagnes region and in the Eifel. Further particulars from: Prof. Dr. R. Schumacker, Directeur, Université de Liège, Station Scientifique des Hautes Fagnes, B-4898 Mont-Rigi, Robertville, Belgium.

Nov. 2-3. BBS. Taxonomic Workshop, Gilbert White Museum, Selborne, Hants. Local Sec.: Dr. J.E. Chatfield, The Gilbert White Museum, The Wakes, Selborne, Alton, Hants GU34 3JH. For details see Bull. BBS, 45:17.

1986

Spring, BBS. Norfolk. Spring field meeting. Local Sec.: Mr. R. Stevenson, 111 Wootton Road, King's Lynn PE30 4DJ. Preliminary details in Bull. BBS, 45:18.

July or Aug. BBS. West Scotland. Summer field meeting. Local Secs.: Mr. D.G. Long, Royal Botanic Garden, Edinburgh EH3 5LR and Mr. G.P. Rothero, Benmore Centre, By Dunoon, Argyll, Scotland. Preliminary details in Bull. BBS, 45:18.

Sept. BBS. Paper-reading Meeting and AGM. University of Leeds. Local Sec.: Prof. D.J. Cove, Dept. of Genetics, University of Leeds, LS2 9JT.

Nov. BBS. Workshop. Details to be announced.

1987

July 24-1 Aug. XIVth IBC Berlin (West). Preceded by IAPT Nomenclature Sessions, July 20-24. For preliminary notice see Bryol. Times, 23:9. Congress Address: XIV IBC. Bot. Garden & Museum, Königen-Luisen-Strasse 6-8, D-1000, Berlin (West) 33, Germany.

July-Aug. IAB. Mainz. Bryological Methods Workshop. For further information see Bryol. Times, 26:6.

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ITEMS FOR THE NEXT ISSUE to be with the Editor, Dr. S.W. Greene, Department of Botany, The University of Reading, London Road, Reading RG1 5AQ, Berkshire, England (Telex 847813 RULIB) by 1st May at the latest. Items for the regular columns should be sent direct to the column editors, whose names and addresses will be found in Bryol. Times 31: 9.