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Bryologia Africana a Bryophyte Flora of Tropical Africa

by Robert E. Magill

After several years of planning the *Bryologia Africana* project, an illustrated flora of tropical African bryophytes, was officially begun on 1 January 1991 at the American Bryological and Lichenological Society winter meeting with the distribution of the newly printed *Guide to Contributors*. The guide establishes requirements and provides explanatory notes for bryologists preparing manuscripts for *Bryologia Africana*. It is intended to give a general overview of the format and style to be used in the Flora. In addition, the guide contains an example treatment, suggested character lists for the mosses and hepatics, a selected list of literature abbreviations, and a quick reference to the literature dealing with tropical Africa bryophytes.

The *Guide to Contributors* is available without charge to those interested in participating in the project.

The Flora will treat taxa from continental Africa and the continental islands between the Tropic of Capricorn and the Tropic of Cancer. All taxa found in the countries listed below will be included in the Flora, including those taxa found only outside the tropics. The Flora of Southern Africa area (Botswana, Lesotho, Namibia, South Africa, Swaziland), and Atlantic Ocean Islands (Ascension, Canary Islands, Cape Verde Islands, Madeira Islands, and St Helena) will be excluded. The countries treated are:

Angola, Benin, Burkina Faso, Burundi, Cabinda, Cameroon, Central African Republic, Chad, Congo, Djibouti, Equatorial Guinea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea Bissau, Ivory Coast, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, Sudan, Tanzania, Togo, Uganda, Zaire, Zambia, Zimbabwe.

Islands included in the Flora area are: *Amirante Isles, Bioko, Comoro Islands, Mafia, Mascarene Islands, Pemba, Principe, Saõ Tomé, Seychelles and Zanzibar.*

The Flora will be published in fascicles - containing either a large family, groups of small families, or significant sub-

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Muscology References Available

by Marshall R. Crosby

For the past several years, the Missouri Botanical Garden has been accumulating a computer-based bibliography of mosses. This bibliography now contains approximately 9,200 records on all aspects of muscology. It is used to generate the manuscript for the quarterly "Recent Literature on Mosses" series that appears in *The Bryologist*. In addition to surveying the recent literature, citations that were originally recorded on index cards, beginning in the late 1960s, have also been retrospectively added to the data base. Complete bibliographies of important muscologists, derived mostly from published sources, have also been added. In addition to being accessible by the author's (or senior author's, in the case of multiple-authored papers) last name, many items are also accessible through key words. Since the bibliography is used mostly for systematic and floristic purposes, its strength is in these areas. Thus, entries that are systematic or floristic in nature are key-worded for important families, genera, countries, and in some instances states or provinces within countries.

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I.A.B. Biennial Meeting in Exeter, 12-23 July 1991

We wish to remind you that the final date for booking residential accommodation is 30 April. Offers of papers and inquiries should go to Dr. M.C.F. Proctor, Hatherly Laboratories, The University, Prince of Wales Road, Exeter EX4 4PS, U.K.

MOSSES '91**International Symposium on the Physiology, Developmental Biology,
Cell Biology and Genetics of Bryophytes****April 11 - 13, Heidelberg (FRG) 1991****organized by****Prof. Dr. W.O. Abel, University of Hamburg, FRG
Prof. Dr. E. Schnepf, University of Heidelberg, FRG**

The Bryological Symposium 1987 in Mainz, held in connection with the XIV International Botanical Congress in Berlin, was a great success. Considering the fact that mosses more and more turn out to represent very suitable model systems for the study of general biological problems, we feel the need to promote an exchange of ideas and results in the fields of physiology, developmental biology, cell biology and genetics of bryophytes. Therefore, it is our intention to organize a symposium for all interested bryologists to be held April 11 - 13, 1991 in Heidelberg (FRG). Various topics such as phytohormone action, cytoskeleton and cell organization, growth and differentiation, molecular and population genetics, and metabolism in bryophytes will be discussed. A motive for time and locality is that the most prominent expert on developmental physiology of mosses, Prof. Dr. M. Bopp (Heidelberg, FRG), will have his 68th birthday on April 12 and will retire.

PROGRAMME**THURSDAY, 11th APRIL***Chairman: E. Schnepf*

09.00 Welcome addresses

09.00 - 10.00 M. Bopp (Heidelberg, FRG): The morphogenetic system of moss protonemata.

Session I: Phytohormone action*Chairmen: L.M. Stange / D.J. Cove*

10.00 - 10.45 D.J. Cove (Leeds, UK): Genetic analyses of phytohormone action.

11.00 - 11.30 R. Reski (Hamburg, FRG): Cytokinin and light quality interact at the molecular level in the moss chloroplast mutant PC22.

11.30 - 12.00 T.L. Wang (Norwich, UK): Isolation of cytokinin regulated genes from *Physcomitrella patens*.12.00 - 12.30 S.C. Bhatla (Dehli, India): Tryptophan uptake and IAA biosynthesis in the auxin-insensitive and auxin-sensitive mutants of the moss *Funaria hygrometrica* Hedw.**Session II: Cytoskeleton and cell organization***Chairmen: J.G. Duckett / H. Quader*14.00 - 14.30 H. Quader (Heidelberg, FRG): Organization and function of the cytoskeleton during side branch formation in protonemata of *Funaria hygrometrica*.14.30 - 15.15 E. Schnepf (Heidelberg, FRG): Development of tnema cells in *Funaria* protonemata.

15.15 - 16.00 J.G. Duckett (London, UK): The assembly and functions of the cytoskeleton during spermatogenesis in bryophytes.

16.00 - 16.45 F.D. Sack (Columbus, USA): Gravitropism in bryophytes: clues from protonemata of *Ceratodon purpureus*.17.00 - 20.00 Poster presentation

FRIDAY, 12th APRIL**Session III: Growth and Differentiation***Chairmen: M.M. Johri / E. Hartmann*

- 09.00 - 09.45 L.M. Stange (Kassel, FRG): Self-organized regulation of cell growth in bryophytes.
09.45 - 10.15 J. Goode (London, UK): Developmental interrelationships between chloronema, caulonema, rhizoids and plates in mosses.
10.15 - 10.45 R. Vicktor (Heidelberg, FRG): Observations on fusion products of liverworts.
11.15 - 11.45 M.K.C. Menon (Delhi, India): Regulation of a sub-sexual life cycle in the moss *Physcomitrium*.

Chairmen: F.D. Sack / H. Becker

- 13.30 - 14.15 E. Hartmann (Berlin, FRG): Light regulation and differentiation processes.
14.15 - 14.45 J.-P. Zryd (Lausanne, Switzerland): Photoresponses of protoplasts from the moss *Physcomitrella patens*.
14.45 - 15.15 H. Hohmeyer (York, UK): Red light-induced action potentials in caulonemata of *Physcomitrella patens*.
15.45 - 16.30 M.M. Johri (Bombay, India): Regulation of nitrate reductase from chloronema cell cultures of the moss *Funaria hygrometrica*.
16.30 - 17.00 J.G. Duckett (London, UK): Gemma development, liberation and germination in mosses and liverworts.
19.30 - 21.00 Reception

SATURDAY, 13th APRIL**Session IV: Molecular and population genetics***Chairmen: N.W. Ashton / W.O. Abel*

- 09.00 - 09.30 W.O. Abel (Hamburg, FRG): Molecular genetic analyses of bryophytes.
09.30 - 10.00 M. Leech (Norwich, UK): Isolation, characterization and developmental regulation of myb-related genes from *Physcomitrella patens*.
10.00 - 10.30 J.R. Marienfeld (Hamburg, FRG): Moss mitochondrial coxIII gene exhibits extraordinary features.
10.45 - 11.15 F. Thümmel (München, FRG): The phytochrome gene of the moss *Ceratodon purpureus*.
11.15 - 11.45 N.W. Ashton (Regina, Canada): Analysis of stable kanamycin resistant transformants of *Physcomitrella patens* by the Polymerase Chain Reaction.
11.45 - 12.15 D.G. Schaefer (Lausanne, Switzerland): Replicative transformation in the moss *Physcomitrella patens*.
14.00 - 14.30 W. Kammerer (Leeds, UK): Transposon mutagenesis in *Physcomitrella patens*.
14.30 - 15.00 M. Krzakowa (Poznan, Poland): Peroxidases as taxonomic characters.

Session V: Metabolism*Chairmen: S.C. Bhatla / M. Bopp*

- 15.30 - 16.15 H. Rudolph (Kiel, FRG): Studies on secondary metabolism of *Sphagnum* cultivated in bioreactors.
16.15 - 17.00 H. Becker (Saarbrücken, FRG): In vitro-culture of bryophytes as a source of secondary compounds.
17.00 - 17.30 P. Beutelmann (Mainz, FRG): The uncommon fatty acid pattern of the bryophytes.
17.30 - 18.00 D.H. Brown (Bristol, UK): Heavy metal uptake, cellular location, and inhibition of moss growth.

SUNDAY, 14th APRIL

- 09.00 - 13.00 Dr. Philippi (Karlsruhe, FRG): Bryological excursion

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family units - as manuscripts become available. Very large genera may occasionally be published as a fascicle. Manuscripts may be submitted, in either English or French, on disk or typed, double-spaced on one side of standard, letter-size, white, paper (8 1/2" x 11", A4). Arrangements for transfer of manuscripts on disk should be made with the appropriate editor in advance, printed copies will also be required.

A list of contributors will be kept by the editors and published periodically in *The Bryological Times*. Bryologists interested in participating should indicate in a letter to the appropriate editor the group they are prepared to treat and date they expect to submit the manuscript for review.

mosses — Robert E. Magill, Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166 USA; Phone (314) 577-5161, FAX (314) 577-9597.

hepaties — Tamás Pócs, Institute of Ecology & Botany, Hungarian Academy of Sciences, H-2163 Vácrátót, Hungary.

Best Book Buys

For my second selection for a best buy in bryological books, I recommend Hank Whittier's book on the mosses of the Society Islands, still available from The University of Florida Press at the original low price. This book is the first modern treatment of mosses in the South Pacific area and contains keys, descriptions and drawings of 178 moss taxa plus an extensive bibliography and glossary. The reference is as follows:

Whittier, Henry O. 1976. Mosses of the Society Islands. The University Presses of Florida, Gainesville, Florida. 410 pp. Hard cover. Price \$17.50 (US).

Dale H. Vitt

contd p. 1: *Muscology References*

The vocabulary of key words is not carefully controlled, however. Entries pertaining to other areas of muscology tend to group under a few generalized key words, such as ecology, morphology, chemistry.

Due to present hardware and software limitations, the bibliography is not yet available on-line to outside users. However, we will gladly provide subsets of the bibliography either as printouts or on diskettes. Those wishing to obtain references should submit a list of key words for searching. Printouts will be provided of the author's name, the year of publication, the title of the article or book, and the citation in the journal. Those wishing to receive this information on diskette should submit an MS-DOS formatted 5-1/4" or 3-1/2" diskette with their request. Because of the way the bibliography is organized, requests may be filled by returning several separate lists of titles, corresponding to searches by individual key words.

By accepting sets of references, users agree to use the information in the normal course of their research work, not to add the information to other than personal data bases, not to reproduce the information in the form in which it was received, and to make appropriate acknowledgements of the source of the information in publications and other ways in which it may be used. The Missouri Botanical Garden makes no guarantees or warranties concerning the accuracy of the information and has no liabilities whatsoever for payment of damages arising from the use of the information [sic!].

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Novon, A New Journal for Botanical Nomenclature from the Missouri Botanical Garden

by Marshall Crosby

In 1991, the Missouri Botanical Garden will begin publishing a journal devoted to the establishment of new nomenclatural entities and new taxonomic synonymy. The name of the journal, *Novon*, is a made-up word meaning any nomenclatural entity at its first publication. *Novon* will include descriptions and names of new taxa, new combinations of existing names, and new names. Although the format of articles will be concise and stereotyped, ample space will be provided to discuss the taxonomic and/or nomenclatural justification for proposed nova. Taxonomic coverage will be restricted to vascular plants and bryophytes. The journal will be automatically distributed quarterly to all who receive the *Annals of the Missouri Botanical Garden*. Initially, *Novon* will not be available as a separate subscription or exchange. Beginning in 1991, the editorial policy of the *Annals of the Missouri Botanical Garden* will be changed to exclude articles devoted to nova.

Novon will provide a means to rapidly publish nova. To speed typesetting, authors should submit manuscripts as two printed copies and on diskette. Authors are also requested to submit xerographic copies of basionyms for new combinations and replaced names for new names. Detailed instructions for authors are available from the editorial office of *Novon*, Department 11, Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166. Each manuscript will be reviewed for nomenclatural correctness under the current edition of the *International Code of Botanical Nomenclature*, for the pre-existence of any proposed new nomenclature, and for scientific merit.

Experiences of a Herbarium Taxonomist

by Jaakko Hyvönen

In recent years the use of microcomputers has increased rapidly in the herbaria and this has made many curatorial duties much easier. Many improvements in this field are, to our regret, still fairly expensive to accomplish and thus in many herbaria postponed for several years. However, some improvements can be carried out immediately, without use of computers, and without any extra financing. Thus, precious herbarium time (=money) is being saved for more important tasks. This is utterly important because some botanists are now claiming that herbaria are out of date and their use could be abandoned (Clifford *et al.* 1990).

Taxonomic studies on bryophytes usually involve many hours of work wasted for opening packets, packing and other related tasks of secondary or tertiary importance. As very few bryologists are nowadays assisted constantly by technical staff, much of this kind of work is done by scientists themselves. Consequently, improvement of the herbarium techniques is essential. Although the suggestions given here are not new, they are not yet widely accepted and therefore worthwhile mentioning.

First of all, the antique habit of attaching packets on herbarium sheets is a real annoyance in practice (every bryologist probably knows the irritating sheets including more than one taxon). There is no

reason to preserve this old procedure in bryological herbaria. All specimens can be packed in folders large enough to accommodate the old sheets, or the old specimens can be stacked separately after or before the folders under each taxon. The use of folders also enables economic use of packets of different sizes, according to the included specimen. The custom to keep separate records of the sheets and specimens can also be abandoned immediately and numbers may be given only for the packets. The folders also enable easy reorganization of collections according to taxonomic changes. They are also very useful when more than one specimen is taken out of the herbarium case for study.

While studying terrestrial genera

such as *Pogonatum*, with packets including in some cases more debris and sand than bryophytes, one also realizes the importance of proper folding of the packets. The folding illustrated in Fig. 1 is, I think, a very good way to ensure that debris as well as small fragments of the specimens do not fall out while packets are opened repeatedly.

The storing of specimens in several packets is a nuisance and should be avoided as much as possible. It might be done only to preserve type specimens and other material of special importance, as well as packets with original notes. If necessary, the original specimen may be protected by a single new packet of high-quality paper.

The label texts are of crucial impor-

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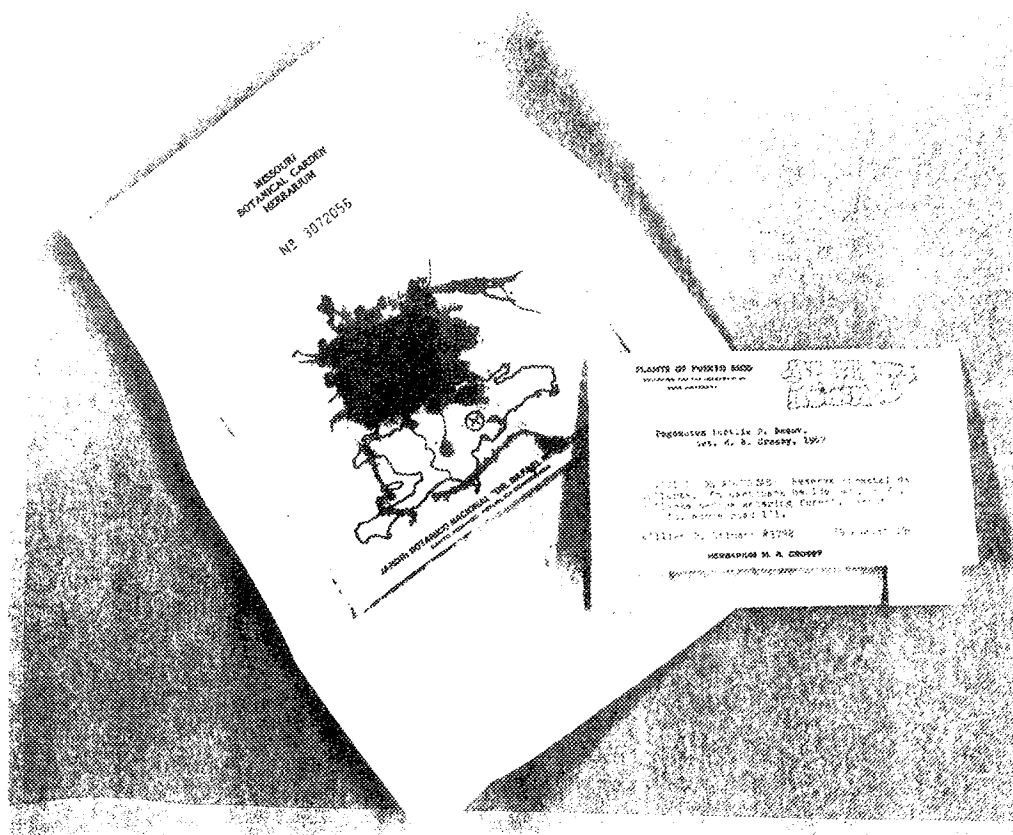


Fig. 1

contd p. 5: *Herbarium Taxonomist*

tance in every study. When notes are written in Chinese, Japanese or some other language not widely mastered by bryologists, translation of the labels may require too much time. It is readily understandable that old specimens bear such labels, but recent collections should preferably be written in English.

Labels without ecological information should also belong to history when we approach 21st century, but this is unfortunately not true. Specimens indicating at best the nearest village or city have much less value compared with those equipped with accurate ecological notes as well as coordinates of the locality, or, even better, a small map indicating the site (Fig. 2). The recording of ecological data can most conveniently and quickly be done by using packets with numbers and relevant data printed on them (Fig. 3). To simply encircle the right combination is much easier to do in the field than to write clear text with numb fingers on water-soaked paper.

References

- Clifford, H.T., R.W. Rogers
& M.E. Dettmann. (1990).
Where now for taxonomy
- *Nature* 346: 602.

author's address

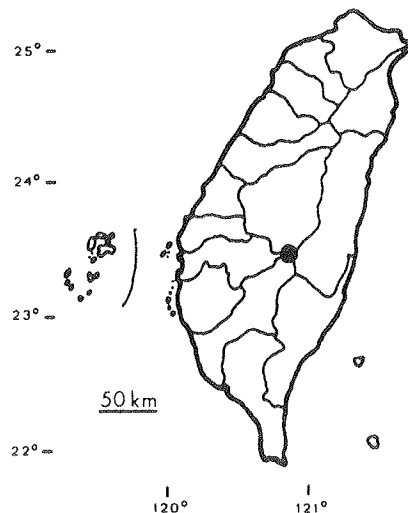
University of Helsinki
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Unioninkatu 44
SF-00170 Helsinki,
Finland

BOTANICAL MUSEUM, UNIVERSITY OF HELSINKI (H)

Pogonatum microstomum (Schwaegr.) Brid.

det. J. Hyvönen 1988

CHINA. Taiwan. Chiayi-Nantou: Yushan National Park, trail from Tataka saddle parking place to Paiyun cottage, ESE-slope with orohemiboreal forest of *Tsuga chinensis* var. *formosana* and *Abies kawakamii* with undergrowth of *Yushania niitakayamensis*, alt. 3 100-3 400 m, on humus by trail side



21.XI.1987 Jaakko Hyvönen 3794
loc. 9b

Fig. 2

Botanical Museum, University of Helsinki, Finland

LIGHT: sunny, open, partial shade, full shade
WATER: dry, mesic, moist, wet, submerged to ... m
TOPOG.: ridge, slope, valley, trail, road side, dense/open/cut forest, tropical rainf., stone field, desert, savannah, grassland, heath, peatland, swamp, pond, sea, lake, river, brook side, N S E W expos.

SUBSTRATE.

Soil: gravel, sand, clay, litter, humus, peat, moss
Rock: outcrop, cliff, crevice, top, wall of boulder/stone, underhang, seepage, bird perch, siliceous, basic,
Tree: base, trunk, branch, twig, stump, bark, leaf, bush, climber, log, dead, fallen, decorticated, rotten, treefern, conifer, palm, ... m above ground, name:

ALT. m

abundant/sparse

DOMINANT PLANTS:

Fig. 3

Novel Techniques Useful For Collecting Bryophytes

by Jerry A. Snider and Si He

Ecology Column. Send contributions to the column editor J.M. Glime, Department of Biological Sciences, Michigan Technological University, Houghton, Michigan 49931, U.S.A.

Bryophytes considered to be rare by many may simply be overlooked due to their small size and/or because they occupy habitats so inaccessible as to make collecting impractical, if not impossible. We became acutely aware of these pitfalls recently while sampling for bryophytes inhabiting the dark, moist undersurfaces of rock ledges, vertical rock faces of narrow crevices, and rear walls and ceilings of shelter caves and rock houses. Our previous attempts to sample these areas properly invariably led to sore necks, scraped noses, eyes full of debris, and inadequate samples. We finally developed two simple and quick techniques that might prove useful to other bryologists engaged in floristic or ecological studies in similar habitats.

The first, use of a flashlight, was suggested to us by Dr. Don Farrar (Iowa State University), who conducts research on populations of the fern gametophytes of *Vittaria* and *Trichomanes*. These small organisms frequent habitats identical to those outlined above. We have experimented with a variety of flashlights ranging from tiny, one-celled, AAA penlights to large, three-celled D magnum lights (and also headlamps). The majority of these are either too heavy and cumbersome to carry, or provide short-lived illumination of limited quality. We have found particularly useful the small, two-celled, AA flashlights machined from aircraft aluminum, e.g. the Brinkmann mini-mag, available in the U.S.A. These easily carried, waterproof lights typically utilize bright, longlasting halogen or argon lamps that provide a spot or flood adjustable beam, come with a spare lamp stored in the tailcap, and have unbreakable lenses.

Shirt pocket clips, belt holders, and wrist cords are usually available as accessories. A major inconvenience with this style is that both hands are required to turn on the light, and the beam must be readjusted each time. A new series of flashlights of similar quality and design (available through Eddie Bauer & Co., U.S.A.) has overcome these flaws by providing a lockable pushbutton switch in the tailcap. These lights retain the adjustable beam feature, and come with brightly colored, inlaid rubber grips along the handles.

In an attempt to alleviate accessibility problems we began to experiment with a variety of adhesive tapes. We wanted to 1) test whether or not any brands or styles of tape would stick to cool, moist, rock walls, and 2) to determine if plants would successfully bind to any of the adhesives. Several types and brands of tapes were utilized: vinyl duct tape, bandaging (medical) tape, electricians tape (cloth and plastic), assorted brands of vinyl and plastic packaging and household repair tapes, and common painter's masking tape (paper). Among the standards desired were: portability, ease of use in the field, ability to stick to rock surfaces, and ease of storage. Two criteria shared by all tapes tested were that they must be packaged as rolls, and they must be a minimum of five centimeters in width to provide adequate surface area. Although none of the tapes adhered well to damp or moist (seepy) rock, some worked better than others. The thin, transparent, vinyl packaging tapes were quickly rejected because they tended to fold over and stick to themselves, wrinkled easily, and were simply impossible to handle efficiently in the field. The thicker vinyl repair tapes,

duct tapes, and bandaging tapes handled adequately in the field; however, they were bulky to carry, difficult to cut or tear, adhered poorly to moist rock (although when attached to initially dry material some were resistant to moisture), and were difficult to preserve for return to the lab. Paper masking (painter's) tape (in white or cream-coloured rolls) proved the best for us all around. It was light weight and easy to carry, tore easily with the fingers, and stuck (albeit lightly) to the damp rock ceilings of caves. Minute leafy gametophytes attached easily to the sticky surface of the tape even when the tape itself adhered poorly to the moist rock substrate. In addition, the masking tape molded easily and smoothly over uneven surfaces and could be removed with a slight pull. More importantly, the white colour provided an excellent background when scanning the tape surface with a hand lens or dissecting scope. Once used, the tape segments could be conveniently stored for study upon return to the lab. For routine use in the field, we precut 5cm x 17cm strips, folding under a 2cm portion along one end to serve as a non-tacky gripping area. These segments were attached, one on top of another, along one of the broad surfaces of a 6cm x 17cm x 5mm plexiglas strip. To use, we simply grasped the folded non-tacky end, pulling off one strip at a time as needed. For storing after sampling, we reattached the used strip to the opposite side of the plexiglas, tacky surface down, and recorded collecting data on the upper, non-adhesive side. Used tape segments can be stacked one on top of the other with no apparent loss of ma-

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contd p. 7: **Novel Techniques**

terial. These segments are easily removed later for study under a dissecting scope. To prepare small vouchers of the specimens, add a drop of water to the specimen stuck to the adhesive and tease the material free. A simpler method involves the use of a wetting agent, Pohlstoffe (see Wagner, D. A. 1981, *The Bryologist* 84: 253). One drop of Pohlstoffe releases the plant material in a matter of seconds.

We also tested the tape technique for sampling larger areas for ecological studies. Strips several yards long can be taken directly from the roll, pressed against the substrate, and smoothed with light pressure from the hand or from a small roller device such as a photographic print roller. The long strips can be removed by merely wrapping the tape, sticky surface down, around a piece of plexiglass with di-

mensions similar to those described above. These can then be studied under the dissecting scope, unrolling short sections at a time.

Using these methods we discovered numerous protonemal "flaps" or "leaves" of *Tetrodontium brownianum* on the darkened ceiling of a deep sandstone shelter cave in south central Ohio. This proved to be a record new to the state and represents a significant southward range extension (by almost 1000 km) in North America. Once considered to be extremely rare in North America, we have now discovered (by using these techniques) that *Tetrodontium* is extremely common in localized habitats in south central Ohio, eastern Kentucky, southern Indiana and north central Tennessee. An abbreviated sample of findings using these techniques follows:

protonemal "trumpets" of *Diphyscium foliosum*
leafy gametophores of *Diphyscium cumberlandianum*
abundant thalloid protonemata of *Tetraphis*
protonemal "leaves" and leafy gametophores of *Tetrodontium*
leafy gametophores of *Fissidens ravenellii*
assorted asexual propagules of numerous bryophytes, especially of *Pseudotaxiphyllum elegans* and *P. distichaceum*
assorted minute leafy hepatics (*Kurzia*, *Cephaloziella*, etc.)

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Tropical Bryology Illustrations Now Available On Disk

by Jan-Peter Frahm

The journal *Tropical Bryology* edited by J.-P. Frahm and S.R. Gradstein is the only bryological journal which is available also on diskette for MS-DOS computers. So far only the text has been distributed allowing to read the contributions on screen and in addition to search fast for any words or to make use of parts of the text in other computer applications (such as the bibliographies) without need to retype it. The text is an ASCII file and can thus be displayed on screen or imported in any wordprocessor. A comfortable software provided with the textfiles allows to select a paper, show the contents on screen, and to search and find any string (species names, authors, localities) in the text.

For this purpose a special menu program was created by B.J. O'Shea to select files from a table of contents. Parts of the text (e.g. descriptions of species, lists of records) can be pasted

in your own files. This is especially ideal for making use of bibliographic references.

The disk version of *Tropical Bryology* did not yet include the illustrations. Although this was intended when the journal was created, there were some technical problems. First of all the file size of the scanned illustrations was so large that only 2-3 illustrations could be packed on one high density disk, even if they were scanned in not the best quality (150 dpi). Second, there were no programs available to display the illustrations on screen, which could be provided free for the subscribers of the disk version of the journal. None of the programs available supported the large file sizes of a full page illustration.

Now new software makes it possible to reduce the size of a scanned image. In this way, the file size too gets so small that the picture can be displayed

on screen by picture-show programs. The side-effect is that now one journal page can be displayed in full on screen. Previously, only one fifth of the picture could be seen at a time when the scanned image was loaded in a paint program. So a complete issue of *Tropical Bryology* can now be subscribed on disk.

How to make use of *Tropical Bryology* on disk

Text and illustrations can be evaluated in the following way:

Text

You can make use of the textfiles with your wordprocessor or the text viewer (called LIST) which comes with this diskette. Every wordprocessor can load ASCII files. Try to load the textfiles. If you have problems, rename the textfiles

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and add the extensions your wordprocessor adds automatically to the filename. In some cases, loading of ASCII files may require a special setup in the menu.

You may read the text with your wordprocessor by scrolling through the screen pages or print parts of the files. With block operations, you can mark parts of the text (e.g. bibliographies, descriptions) and save the parts to disk or, if your wordprocessor allows, paste it into another window: special datafiles may be created in this way.

The text files on disk are in standard ASCII format. This is required so that every subscriber with virtually every wordprocessor can make use of the files. However, the ASCII file is formatted. This means every line finishes with a carriage return. (Otherwise the text would fill all lines without wordwrap). These carriage returns may be troublesome if you are loading the text in your wordprocessor and want to reformat it, e.g. for printing. You can remove all carriage returns at the end of each line (not at the end of a paragraph) with the program "TEXTCON" (#214 in the IAB software library).

Bibliographies

Bibliographies can be used as unstructured databases. For this purpose all bibliographies of all contributions in each volume have been copied together into a special file. Using the LIST program used to display files on this disk, you can use the "S" or "F" options to search for specific pieces of text or all occurrences of a piece of text. With unstructured database programs such as 3x5 Cards (#8 in the IAB software library) you can use the bibliography as database. Every citation finished by a carriage return is recognized as record. Therefore carriage returns after normal lines must be removed, either by hand or by the program "TEXTCON" (see above). All records matching the search are displayed and can be stored to disk and added for instance to a manuscript.

The bibliography can also be loaded into MS-Windows Cardfile. For this purpose, the references can be imported as ASCII database into the notebook of "Active Life" (# 293 of the IAB software library) and exported as cardfile. Every paragraph (=reference) is recognized as a record and kept in a cardfile. In addition, the first line of the record (author and year) and included in the index line on top of the cardfile. This index line may be modified and changed. All cardfiles are automatically sorted alphabetically. With the search function, one may search for any text string and with the copy and paste function, the record can be pasted into the wordprocessor.

The programs cited above are available from the Software Library of the International Association of Bryologists. They are free for members of the IAB by sending a blank 5.25" disk for each program to J.-P. Frahm (address see below).

For *Tropical Bryology*, no index will be published, since indexing is easily possible with the LIST program which comes with this diskette to read the textfiles, and which is being used to display these instructions. By pressing the F1 key you will get a survey of all possible functions. The S (=scan) or F (=find) commands allow you to search for any textstring in each textfile. In this way you can search e.g. for keywords or species names. The contents of the whole disk can be scanned by using the DOS command "find". For details see your DOS manual.

Illustrations

The illustrations are scanned in high resolution (300 dpi) but 1/3 reduced in size allowing to display them in full on screen.

To make use of the pictures, they can be

- viewed in picture-show programs;
- displayed, printed and manipulated in paint-programs. Such programs allow clipping parts of the illustrations, erasing items or adding text;

- loaded into Desktop-Publishing programs such as Pagemaker and merged with text.

These programs, however, are using numerous different graphics formats (TIF, IMG, BMP, MSP, PCX, MAC, EPS, etc.). The illustrations of *Tropical Bryology* come in PCX-format and can thus be loaded in any graphics program supporting this format such as PC-Paintbrush. For those who have no graphics program for .pcx format available, we recommend using one of the following programs included on a special 1.2 Mb utility disk which is available free for subscribers of *Tropical Bryology* on disk. With these programs, the pictures can be displayed on screen, and also converted to a couple of different graphics formats. In this way the pictures can be converted into a format which is supported by your paint program, e.g. IMG for GEM, MSP for MS-Windows, TIF for Aldus Pagemaker etc.

- a. EASEL, a program running under Microsoft Windows (required). You can load the illustrations in Easel and save them as Microsoft Paint (.msp) Macpaint (.mac) or GIF file.
- b. GCP, also a program running under Microsoft Windows. Exports illustrations in the same formats as Easel.
- c. ICONVERT displays and converts from and to a dozen different formats.
- d. GRWORKSHOP converts from and to IMG, BMP, PCX, EPS, GIF, MAC, TIF, WPG and MSP formats. ICONVERT may cause some distortions displaying *Tropical Bryology* illustrations. So this program had better be used for conversion purposes only.

The complete *Tropical Bryology* on disk including text and illustrations will be available from vol. 4 on which will be published during 1991. A demonstration disk can be ordered free from J.-P. Frahm, Universität Duisburg, Fachbereich 6, Botanik, Postfach 101503, 4100 Duisburg, Germany.

A Mapping System for dBase

by Jan-Peter Frahm & Brian O'Shea

Computer Techniques Column. Send contributions to the column editors: J.-P. Frahm, Universität Gesamthochschule Duisburg, Botanik, Postfach 101629, D-4100 Duisburg 1, Germany, or B. O'Shea, 131 Norwood Road, London SE24 9AF, England, U.K.

The database of the bryophytes of the Vosges Mountains, France (#312 in the IAB software library) has been enhanced by B.J. O'Shea and J.-P. Frahm to a complete grid-mapping system running under dBase. Every record now consists of the species name and 82 fields for every grid (map 1:25 000).

It comes with a dBase program and thus can be used by colleagues without any experience with dBase.

The options include:

1. to add or remove species to the database;
2. to browse through the database;
3. to edit records (a screen in the form of a grid map is used for this, in which checkmarks in the appropriate place can be inserted);
4. to display or print a list of all species reported for a selected grid and also of all species not yet recorded for one grid;
5. to print a complete list of all bryophyte species of the Vosges Mountains;
6. to display or print all grid references for a selected species.

An outprint of a distribution map is possible by using a resident printscreen program.

This is an example of how dBase can be used relatively simply for a mapping project. By modifying the database structure and the screenform according to your own requirements, this scheme can be adapted by anybody for other mapping projects.

The disk is available free for members of the IAB (as are all other programs of the IAB software library) by

sending a blank 5.25" disk to the first author.

Jan-Peter Frahm
Universität Duisburg
Fachbereich 6, Botanik
D-4100 Duisburg
Germany

Brian O'Shea
131 Norwood Road
London SE24 9AF
United Kingdom

News and Notes from Australasia

by Rodney Seppelt

The Australasian bryological scene has been full of rewarding experiences over the past few years. The Annual John Child Forays in New Zealand are always well attended and occasionally visitors from Australia have made it across the Tasman Sea. The first meeting to be held in Australia was in December 1988 in Tasmania and a follow-up meeting is planned for September 1991 in Canberra. The large contingent of New Zealanders, and some from elsewhere (North America, South America, India), at the Hobart meeting was most welcome and we look forward to participation by anyone from anywhere in any future gathering either in New Zealand or Australia.

Detailed reports of the Bryological

meeting in Tasmania and the annual John Child Forays have appeared in the *Australasian Bryological Newsletter*.

Work is continuing steadily on the revision of the New Zealand moss flora. Local interest in the New Zealand bryophytes has been strong for many years, helped along by several popular handbooks and Sainsbury's moss flora. The release of Scott and Stone's book in 1976 certainly made a difference for those struggling with the Australian mosses and now we are working towards a moss flora for Australia to be published as part of the Flora of Australia series. We need additional contributors in many families and genera so would welcome offers or expressions of interest from specialists. An hepatic flora is also being worked on and co-ordinated by George Scott.

Bryologists everywhere will be delighted to learn of the recent award of a Doctorate of Science from the University of Melbourne to both Ilma Stone and George Scott. These Doctorates are justly deserved rewards for their great contributions to bryology in Australasia.

author's address

Antarctic Division
Department of Science & Technology
Channel Highway

Personalia

Bryologists around the world will be concerned to know that Georg Scott, Melbourne, suffered a severe heart attack last year. After some time taking a forced rest George is well and truly vertical again, although not able to do all he would like.

Thoroughly in deserved many years of research both George Scott and Ilma Stone have been awarded their Doctorate of Science Degree from the University of Melbourne.

Rodney Seppelt

New Publications

Rückert, D. & W. Korth 1990.
Bibliographie bryologischer
Bibliographien - Bibliography on
Bryological Bibliographies. Cou-
rier Forschungsinstitut
Senckenberg 132, 144 pp. ISSN
0341-4116, ISBN 3-924500-71-1.
Price DM 26.80 (approx. US\$ 18)

The Senckenberg Museum in Frankfurt, Germany, is one of the famous Natural History Museums in Germany. It publishes several scientific journals, books and series, and also maintains an information center for biology, which runs a literature databank BIOLIS. BIOLIS, the Biological Literature Information Senckenberg, is a complement of the American databank BIOSIS PREVIEW and includes titles from Germany, Austria and Switzerland. It is bilingual (English/German) and includes translations of the original titles and keywords into the other language. It covers botany, zoology, nature conservation and environmental studies as well as palaeontology.

BIOLIS is on-line accessible through the host DIMDI. Literature searches can be ordered or performed in libraries connected with DIMDI. Information can be obtained through the Informationszentrum für Biologie, Forschungsinstitut Senckenberg, Senckenberganlage 25, D 6000 Frankfurt/M. 1, Tel. 069/7542-350, Fax 060/746238

In addition to the compilation of current literature, the information center for biology publishes a series biological bibliographies. Volumes have thus far appeared on birds, bats, whales, amphibia, reptilia, lichens, and bryophytes. They are so-called "secondary bibliographies", listing publications which contain at least 50 references. By this way 1468 titles are included in the volume on bryophytes reviewed here. The titles are arranged alphabetically by authors and numbered consequently. The most useful feature of this bibliography is, however, the

comprehensive subject index. The index includes taxonomical, geographical and special thematic keywords.

Such a bibliography can never claim to be complete and the selection of titles is in part subjective and in part also determined by chance. The list of references was mainly compiled in the libraries of the Senckenberg Museum, the Botanical Museum of Berlin and the University of Duisburg. Although the authors are librarians and not bryologists, they have made an admirable effort to check and update the names of liverworts and mosses using the lists of Grolle and Crosby & Magill. The bryological bibliography provides access to no less than 50 - 100.000 titles and is a useful introduction to comprehensive bibliographical citations on particular bryological subjects.

J.-P. Frahm

W. Frey and H. Kürschner 1991.
Conspectus Bryophytorum
Orientalium et Arabicorum.
Bryophytorum Bibliotheca 39, 184
p., 1 fig., 1 tab. J. Cramer in der
Gebrüder Borntraeger
Verlagsbuchhandlung, Berlin,
Stuttgart. ISBN 3-443-62011-6.
Price DM 80,- (approx. US\$ 55)

This is a full, annotated catalogue of the bryophytes of the Near and Middle East. The area treated covers eighteen different countries and ranges from the Sinai and Israel in the west to Afghanistan in the east, and from Turkey in the north to Saudi Arabia and Yemen in the south. In total 4 hornworts, 210 liverworts and 922 mosses are reported for the area. Bryophytes appear to be very unevenly distributed in the region due to the strong climatological and ecological differentiation of the region. The highest species diversity is found in the northern part of the region, especially in Turkey which has 828 bryophyte species. Not unexpectedly,

the Arabian Peninsula is poorest in species even though no less than 23 liverworts and almost a hundred moss species have been found in the desert state of Saudi Arabia. Qatar and Bahrain appear to be absolute "bryophyte deserts" with no species reported. The data have been extracted from 126 papers dealing with bryophytes of the region, including results of work by the authors and their associates in the region over the past thirty years. The catalogue shows what kind of bryophytes may occur in a typical desert area, and is an essential source for those interested in the bryophytes of the Near and Middle East.

S. Piippo 1990. Annotated cata-
logue of Chinese Hepaticae and
Anthocerotae. Journ. Hattori Bot.
Lab. 68: 1-192.

This catalogue lists 884 liverwort species in 147 genera reported for China. For each species the occurrence in the different provinces of China is indicated by means of full references, and over four hundred notes give taxonomic or floristic particularities of individual species. The reference list of almost a thousand titles is suggestive of the kind of herculean task the author has undertaken. Even though, the author suggests that some literature, including local floristic papers published in China, may have been overlooked. No doubt our Chinese colleagues will be able to add the lacking data and correct wrong ones when there are. The author should be thanked for the hard work to put this impressive and useful catalogue to-

Colophon

The Bryological Times, founded in 1980 by Stanley Wilson Greene (1928–1999), is the bimonthly newsletter of the INTERNATIONAL ASSOCIATION OF BRYOLOGISTS. It is published in Edmonton (Canada) and distributed from Canberra (Australia), Edmonton (Canada), Eger (Hungary), Geneva (Switzerland), Hiroshima (Japan), Moscow (U.S.S.R.), Praha (Czechoslovakia) and St. Louis (U.S.A.).

Important change from no. 57/58 onwards: all items for publication in *The Bryological Times* are to be sent, preferably on diskette, to the Managing Editor, Guido B.A. van Reenen, University of Amsterdam, Hugo de Vries Laboratorium, Kruislaan 318, 1098 SM Amsterdam, the Netherlands, except those for the regular columns, which may go direct to the column editors.

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Correspondents
R.D. Sappelt (Australia); B.C. Tan (East Asia)

For details regarding membership of the INTERNATIONAL ASSOCIATION OF BRYOLOGISTS (currently US \$10.00 p.a.) write to the Honorary Secretary, Dale H. Vitt, Department of Botany, University of Alberta, Edmonton, Alberta, Canada T6G 2E9. All correspondence concerning mailing to Sandi Vitt at the same address.

Diary

Send contributions to D.H. Vitt,
University of Alberta, Department of Botany, Edmonton, Alberta, Canada T6G 2E9.

1991

April 3-10. BBS Spring Field Meeting. Clevedon, U.K. Inquiries: Peter Martin, 37 Hughenden Road, Horfield, Bristol BS7 8SF, U.K. Tel. 0272 240355.

April 11-13. International symposium on the physiology, developmental biology, cell biology, cell biology and genetics of bryophytes in Heidelberg, Fed. Rep. of Germany. Inquiries: W.O. Abel, Universität Hamburg, Ohnhörstrasse 18, D-2000 Hamburg 52, Germany, B.R.D.

April 12-14. Bryologisch-Lichenologische Arbeitsgemeinschaft field trip. Eschwege, West Germany. Inquiries: G. Schwab, Rödén 44, 6100 Darmstadt, Germany.

April 13-14. Swiss Bryological and Lichenological Society taxonomic workshop on Mniaceae with Michael Sauer, Zürich. Inquiries: E. Urmi, Institute for Systematic Botany, Zollikerstrasse 107, CH-8008 Zürich, Switzerland.

May 31-June 2. Swiss Bryological and Lichenological Association annual meeting. Montbovon (Fribourg), Western Prealps. Inquiries: Dr. Philippe Clerc, Conservatoire et Jardin botaniques, C.P. 60, CH-1292 Chambésy, Geneva, Switzerland.

July 5-12. Nordic Bryological Society Annual Meeting. Kongsvold, Norway. Twenty-fifth anniversary meeting. Inquiries: Gert Mogensen, University Botany Museum, Gothersgade 130, DK-1123, Copenhagen K, Denmark.

July 17-18. IAB Symposium: The Biology of Sphagnum. Exeter, U.K. Symposium preceded by field meeting on July 12-16. Contributed papers are invited. Offers of papers and inquiries should go to P. E. Daniels, Institute of Terrestrial Ecology, Furzebrook Research Station, Wareham, Dorset BH20 5AS, U.K. Tel. 09295 51087.

July 19-23. IAB/BBS Joint Meeting on Experimental Bryology, Exeter, U.K. Symposia, contributed paper sessions and field days. Offers of papers and inquiries should go to M.C.F. Proctor, Hatherly Laboratories, The University, Prince of Wales Road, Exeter EX4 4PS, U.K.

Aug. 4-8. Bryological and Lichenological Section of the Botanical Society of America. Annual meeting with the American Institute of Biological Sciences. Convention Center and Trinity University, San Antonio, Texas. Inquiries: Ann Rushing, Department of Biology, Baylor University, Waco, Texas 76798, U.S.A.

Aug. BBS Summer Field Meeting, Massif Central, France. To be held probably during the third week of August. Inquiries: Roy Perry, Department of Botany, National Museum of Wales, Cardiff CF1 3NP. Tel. 0222 397951, Ext. 267.

Sept. 6-8. Bryologisch-lichenologische Arbeitsgemeinschaft für Mitteleuropa field trip with prof. Poelt, Inn valley, Austrian Alps. Inquiries: Dr. G. Gärtner, Institut für Botanik, Sternwartestrasse 15, A-6020 Innsbruck, Austria.

Sept. 12-15. Swiss Bryological and Lichenological Association and Bryological-Lichenological Arbeitsgemeinschaft für Mitteleuropa. Field meeting. Göschenen (Uri), Central Alps. Inquiries: E. Urmi, Institut für Systematische Botanik, Zollikerstrasse 107, CH-8008 Zürich, Switzerland.

Sept. 14-15. BBS Annual General Meeting and Symposium Meeting, Sheffield, U.K. Inquiries: Tom Blockeel, 9 Ashfurlong Close, Dore, Sheffield, S173NN. Tel. 0742 366861.

Late Sept. Australian Bryological Workshop, Canberra, Australia. Tentative dates are for the 21st to 30th. Inquiries: Heinar Streimann, Cryptogamic Herbarium, Australian National Botanic Garden, Canberra, A.C.T. 2601, Australia.