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The Stanley W. Greene Grant in Bryology

The purpose of this grant is to contribute to the growth of bryology as a research area of international stature. Grants from this fund will offer a grantee the opportunity to develop any area of bryology.

The Stanley W. Greene Grants in Bryology, under the authority of the Executive Council of the International Association of Bryologists, are composed of monies derived from annual interest accrued from the Endowment Fund of IAB.

The IAB Grant Committee (appointed by the President) awards grants on the basis of merit of individual applications. This committee is guided by the following general principles:

1. Direct assistance to carry out re-search is given priority over indirect assistance.
2. Priority will be given to those users who are not covered by other agencies or university funds.
3. Merit of the proposal is of fundamental importance.
4. The award is flexible, and no research-related expenditure of funds is excluded a priori.

Members of the Committee are: Timo Koponen (chairman), Dale H. Vitt (secretary), Jan-Peter Frahm and Zennosuke Iwatsuki.

High priority initiatives

- Interdisciplinary and collaborative research proposals
- Seed money in exploring new areas of research
- Travel to attend international meetings
- Purchase of badly needed material, including books, equipment, and supplies
- Travel for collaborative research
- Travel to study in herbaria or research laboratories
- Partial support for graduate study
- Development of bryophyte herbaria or laboratories
- Field trips to areas of environmental concern

Low priority initiatives

- Conference grants
- Purchase of reprints or page charges
- Technical staff

The 'Glossary' Published

The multilingual glossary of bryological terms, a project of the I.A.B. since 1979, has now been published by the Missouri Botanical Garden under the title *Glossarium Polyglotum Bryologiae* (ed. M.R. Magill), Monographs in Syst. Botany Vol. 33, 297 p.

For many years, discussions among bryologists at various meetings indicated the need for a compendium of well-defined bryological terms. The absence of a standardized list of terms has caused a great deal of misinterpretation of older as well as recent literature. These problems prompted the International Association of Bryologists to support a request by a group of bryologists at the Bryophyte Taxonomy Workshop in Geneva, 1979, to sanction the preparation of a multilingual glossary of bryological terms. Over the last ten years, through the efforts of a small coordinating committee and six language committees, this polyglot glossary has been completed.

The Glossary consists of seven separate and comparable language parts: English, French, German, Japanese, Latin, Russian and Spanish. In each language part the terms are arranged alphabetically and provided with a brief definition, except for the Japanese, Russian and Latin glossaries, which are translations of the English terms. The English glossary, which consists of 1181 entries, is the basic list and is linked to the other lists by means of a num-

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Extra funding for projects already funded from other sources

Additional initiatives

Guided by the goal of enhancing the quality and quantity of research in bryology, the Grant Committee will give consideration to supporting other initiatives, which address the Association's current concerns.

Eligibility

All current members of IAB may apply for grants in support of research.

Operational regulations

Although there are no limits on the size of grants, or on the categories of expenses, in practice the amount of money available is small. Grants of less than \$1000 (US) are to be expected. No limit is set for the number of grants awarded to a single individual, nor is there a limit to the number of grants awarded at one time.

Application

Applicants for a grant should state in clear, simple terms:

- the title
- the objective
- the method of study
- the relation of the project proposal to work completed by the applicant and to other work in the specific area of the project
- the significance to bryology
- the expected costs
- the applicant's demonstrated past experience and accomplishments
- other information indicative of the significance of the project

Furthermore, applications should include the resume of the applicant; the resume of any collaborator or researcher for whom funding is requested; and the names of two persons who could write letters of support.

Applications may be submitted at any time, but preferably not later than six months before the biennial

meeting of the Association. The next deadline will be January 1, 1991, for awards to be presented at the Exeter meeting in July, 1991.

Applications, in triplicate are to be sent to the secretary: Dr. Dale H. Vitt, Department of Botany, University of Alberta, Edmonton, Alberta, Canada, T6G 2E9.

IAB-BBS International Conference on Experimental Bryology and Sphagnum Biology

Exeter, England, 17 - 24 July 1991

The International Association of Bryologists jointly with the British Bryological Society will hold its biennial international bryological conference at the University of Exeter, England, 17-24 July 1991.

The programme includes a 2-day symposium on the Biology of *Sphagnum* (17-18 July), organized by Dr. Roger E. Daniels, and a symposium on Experimental Bryology (19-24 July), organized by Dr. Michael C.F. Proctor and Dr. Royce Longton. In addition, the following fieldtrips will be organized:

1. *Sphagnum* and peatlands field meeting preceding the conference, beginning in Glasgow on 12 July and terminating in Exeter on 16 July
2. two one-day fieldtrips during the conference to sites of bryological interest in the Exeter area

The *Sphagnum* meeting is sponsored by Fisons Horticulture, Canada.

Details on the scientific programme, accommodation and costs are provided in the first circular, which was distributed with the February and March issues of *The Bryological Times*. Registration fees will be 15 pounds (*Sphagnum* meeting), 25 pounds (Experimental Bryology meeting), or 35 pounds (both meetings).

Approximate costs of accommodation in the university residence

halls will be 27.50 pounds per day for dinner, bed and breakfast. The cost of the *Sphagnum* field meeting, including transport, accommodation and food, is about 220 pounds.

The addresses of the organizers are:

Biology of *Sphagnum*

- Dr. Roger Daniels, Institute of Terrestrial Ecology, Furzebrook Research Station, Wareham, Dorset, United Kingdom BH20 5AS

Experimental Bryology

- Dr. Michael Proctor, Hatherly Laboratories, The University, Prince of Wales Road, Exeter, United Kingdom EX4 4PS

- Dr. Royce Longton, Department of Botany, School of Plant Sciences, Plant Science Laboratories, University of Reading, Whiteknights, Reading, United Kingdom RG6 2AS

Please send offers for contributed papers and initial expressions of interest in attendance at the meeting and/or participation in the field meeting to Dr. Royce Longton, before 1 October, 1990. The slip attached to the first circular may be used for this purpose.

A second circular containing booking forms for the meetings, and for accommodation, will be sent towards the end of 1990 to all who express an interest in either meeting.

CONGRESS OF EAST ASIATIC BRYOLOGY

Helsinki, 12 - 19 August 1990

Bryological research and bryogeography of East Asia

Lecture session Ia Chairman T. Pócs

1. Z. Iwatsuki: The moss flora of Japan and its North American connections.
2. R. Stotler: The Hepatic flora of North America (north of Mexico) and its Japanese connection.

Lecture session Ib

3. S.S. Kumar: Bryoflora of India, present state of research.
4. S.D. Tewari & G. Pant: Studies on the Bryoflora of Kuamaun Himalaya.
5. D.G. Long: Bryofloras of Bhutan and East Himalayas.

Lecture session II Chairman M. Ignatov

6. T. Pócs: Correlations between the tropical African and Asian Bryofloras.
7. P.-c. Wu: The East Asiatic genera and endemic genera of the bryophytes of China.
8. R. Grolle: Hepatics in amber, spotlights into the past.

Lecture session III Chairlady B. Crandall Stotler

9. U.K. Mamatkulov: Bryoflora of Central Asia [preliminary]
10. L.V. Bardunov: Bryoflora of Central Siberia. [preliminary]
11. O. Afonina: Bryoflora of Chucotka and the ways of its formation.
12. M. Ignatov: Relationships of moss flora of Altai Mts.

Lecture session IV Chairman B. Tan

13. D.Y. Joshi, D.D. Wani & C.S. Jagannath: Liverwort flora from the tropical rain forests of Andaman Islands, India.
14. P.-j. Lin, T. Koponen & S. Piippo: The bryophyte flora of Jianfengling Mts, Hainan Island, China.
15. J.-x. Luo & A.-k. Tang: Mosses of the Mt. Emei, Sichuan prov., China.

Lecture session V Chairman P.-c. Wu

16. B. Tan: The muscology in the Philippines in 1979-1989.
17. A. Touw: Bryogeographical observations on the moss flora of South Malesia.
18. M.-j. Lai: Bryofloristics of Taiwan and SE China.

Systematics of East Asian bryophytes

Lecture session VI Chairman H. Ochi

19. J.-P. Frahm: The SE-Asian species of *Campylopus*: origin, evolution and distribution.
20. Z.-h. Li: Distribution and bryofloristic elements of *Fissidens* in China.

21. R.A. Pursell: Relationship between neotropical and Pacific *Fissidens*.

Lecture session VII Chairman S.S. Kumar

22. H. Bischler Causse: *Marchantia* in East Asia.
23. B.M. Thiers: The floristic affinities of the Lejeuneaceae of tropical Australia.
24. S.R. Gradstein: Evolutionary trends in Asiatic Lejeuneaceae.
25. J. Vána: Notes on the taxonomy and phytogeography of the family Jungermanniaceae in East Asia.

Lecture session VIIIa Chairman S.R. Gradstein

26. T. Cao & D. Horton: A revision of the genus *Encalypta* in China.
27. D.H. Norris: *Chaetomitrium* in Malesia.
28. N. Nishimura: *Ectropothecium* in East Asia.

Lecture session VIIIb

29. J. Lewinsky: *Orthotrichum* in South-East Asia.
30. H. Ochi: *Bryum* and related genera in East Asia, a summary.

Morphology and ecology of East Asian bryophytes

Lecture session IX Chairlady B. Thiers

31. J.-P. Frahm: Ecology of epiphytic bryophytes on Mt. Kinabalu, Borneo.
32. D.D. Wani, D.Y. Joshi & C. Desai Anagha: On the antibacterial activity of liverworts from Western Ghats, India: preliminary review.
33. X.-j. Li: The winter host (mosses) of gall aphids of China.

Lecture session Xa Chairman Z. Iwatsuki

34. B. Crandall Stotler, T. Furuki & Z. Iwatsuki: The developmental anatomy of *Mizutania riccardioides* Faruki & Iwatsuki, an exotic liverwort from Southeast Asia
35. M. Zang: Fungi associated with mosses from Yunnan and Tibet.
36. J.G. Duckett: A review of fungal-hepatic associations: contrast between tropical and temperate floras.

Lecture session Xb

37. E. Chauhan: Ultrastructure of sporophyte-gametophyte junction in the moss *Phascum cuspidatum* Hedw.
38. S. Bartholomew Began & B. Crandall Stotler: Capsule wall ultrastructure and the dehiscence mechanism of *Haplomitrium* Nees.

News from Helsinki

Change in the organization in Helsinki (H).

The Botanical Museum of the University of Helsinki has become a part of the Finnish Museum of Natural History. This institution was formed by uniting the earlier independent Botanical Museum and Zoological Museum, and some geological and paleontological collections. The new museum still is a part of Helsinki University. The Botanical Museum now has three divisions: the Division of Phanerogams, Division of Mycology and Division of Cryptogams. The latter includes the collections of bryophytes and algae. The major change as to the bryology is that the Division of Cryptogams now has only one Senior Curator, Dr. Pekka Isoviita, and no junior curator or amanuensis at all. In addition, the only long-time technician, Mrs. Launos, is retiring this spring. All this will probably cause delays in sending out loans and in other international cooperation.

The bryophyte herbarium has moved again. This was the fifth move since 1970, surely a world record for a herbarium containing more than 500 000 specimens. The new location is ca. 4 km from the city centre, a newly built office and

industrial facility. The positive thing is that the Division of Mycology (lichens and fungi) will move into the same building within a few months. Then the collections and scientists of the earlier Cryptogamic Herbarium will be working together again after a separation of 20 years. The mailing address of the Division of Cryptogams remains the same.

Honorary Member of the Chinese Botanical Society

Prof. Timo Koponen was elected as a Honorary Member of the Chinese Botanical Society in 1989.

Congress of East Asiatic Bryology

The preparations for the Congress of East Asiatic Bryology to be held in Helsinki on 12-19 August this year are in full swing. The final programme is published in this issue. Those bryologists who will stay extra to study our collections should send a message to Dr. Pekka Isoviita as soon as possible. At present more than 10 participants of the congress have already registered as long term visitors at the same time.

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continued from p. 1: The 'Glossary Published

bering system. An important feature, moreover, is the indication of synonymy for terms with the same meaning. Illustrations are not provided but this drawback is compensated by the very low price of the glossary, which should permit many bryologists, including students, to purchase the book.

The appearance of the *Glossarium Polyglottum Bryologiae* is the result of years of intensive collaboration within the I.A.B. All compilers and especially the editor, Bob Magill, are to be thanked and congratulated with this book, which certainly will serve to enhance scientific communication within the international bryological community.

The *Glossarium Polyglottum Bryologiae* may be ordered from the Publications Department of the Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299, U.S.A. at the price of US\$ 13.50 for U.S. shipments and US\$ 14.50 for non-U.S. shipments. Orders should be prepaid.

New Newsletter

"Bryologische Rundbriefe" is the title of a new bryological newsletter in Germany published irregularly by Dr. Jan-Peter Frahm. The purpose of this newsletter is to stimulate communication between (mainly amateur) bryologists in East and West Germany.

Bryological events in Germany have largely been confined to annual field trips of West German bryologists organized by the "BLAM" and biennial meetings of East German bryologists organized by the "CEBWG". Thus, German bryology has been split into two bodies.

Since there have never been any joint activities except for the meetings, many members have expressed their wish for more information. To fill this gap it is planned to publish information on new bryological literature and on field trips in Germany, and to publish notes on floristics and on the definition of troublesome taxa. In addition, field trip reports, notes on herbaria, collections and new projects, discussions, advertisements (e.g. concerning second hand literature offered for sale or wanted), information on the activities of other bryological societies, etc. will be included.

The first issue contains a survey of bryological journals, information on new bryological books, illustrated guides to bryophytes and the IAB software library, a list of recent bryological literature from Germany, some lines of the unpublished "Mooslob" by P.W. Schimper, etc.

The newsletter can be obtained by remittance of DM 10.-- (approx. US \$6) to postgiro Essen 2243 93-430 (bank code 360 100 43) made payable to Dr J.-P. Frahm, or by Eurocheque in DM, or cash in any of the major convertible currencies, sent to Dr Frahm. Address: Universität Duisburg, Fachbereich 6, Botanik, Postfach 101629, D-14100, Duisburg, FRD.

The Ecology Column: Introduction

by

Janice M. Glime

A contribution to the Ecology Column, edited by J.M. Glime

One of the most exciting things about introducing a new column is the opportunity it provides for reflection and developing a perspective. In developing this column, I had to ask myself what I could do for the field of bryophyte ecology that might be better served here than in the refereed literature. I am reminded of the spirit with which Stanley Greene began this newsletter and kept it alive for so many years, always looking for new ideas and new contributors. In that spirit, I looked for something that could be totally new, yet needed. As I wondered how to pique the interest of my colleagues around the world sufficiently that they would send me articles for this endeavor, I remembered an exciting idea that Gert Mogensen and I discussed some years ago during an excursion. Nowhere in bryology do we have a place to debate our partly formed ideas, our notions of the way the bryophyte world might be operating. What better place is there to air our theories than in the *Bryological Times*.

So in this first column, I shall set out my goals for a new kind of column. Since ecology encompasses all fields of biology, I should be able to elicit reactions from all of you, as each of you has something unique to contribute to our overall background of the ways in which bryophytes manage to live and interact in their environment.

1. Provide a forum for debate and discussion of ideas, particularly as they apply new theories about plant ecology to bryophytes.
2. Inform our readers of current bryophyte ecology research around

the world.

3. Provide a place to share ecological concerns and problems where our colleagues might be able to help us.
4. Announce opportunities in bryophyte ecology or projects that need help from colleagues.
5. Announce "discoveries" such as new methods that particularly apply to ecological work on bryophytes.

This is an ambitious list. The readership and the contributors will determine the balance among these topics. It is my hope that at least one issue per year will be the presentation of a theory or idea, developed and supported by its author, that will be debated or supported by letters to this column in subsequent issues. I will trust that such responses will be offered in such a professional manner so as not to embarrass or offend anyone, but rather to stimulate thought, and perhaps even inspire some professional or aspiring student to take on the task of providing the necessary tests of the hypotheses.

Certainly some of our ideas will prove not to be new, and we can learn from our colleagues where these issues have been addressed, but from all of them I hope we will be challenged to think in new perspectives and be inspired to new heights in our own work.

To set the stage for your contributions and responses, I present the following monolog. I invite your comments, both in support of the ideas, and your ideas to the contrary, to be published in the next few issues of *The Bryological Times*.

Primitive or Advanced?

Bryophytes are traditionally considered to be primitive plants. They seem to have been on Earth longer than most vascular plants. If one treats the word primitive to mean having evolved first, then calling them primitive becomes a tautology. However, if one considers it to refer to their ability to cope with the environment, then application of the term to any organism or group of organisms becomes debatable. Therefore, I contend that the primitiveness of bryophytes is likewise debatable.

It is true that they are simple in gross morphology. But morphology is not the only kind of heritable trait. It stands to reason that if rates of mutation are dependent on the chemical properties of DNA, then those organisms that have had the longest time in which to change should have changed the most. So where has this change gone?

Several explanations for their simple structure might be offered:

1. Bryophytes are so limited by their lack of vascular tissue and consequent small size that it is impossible for their simple structure to change greatly due to lack of space or organ development where it can be expressed.
2. The simple structure has such an advantage that it has been retained through selection.
3. The genes that maintain certain critical developmental pathways are so well protected that a major change in form has been virtually impossible.

If any of these or combination of these is operating, we must still ask

where the normal rate of genetic change is placing its effects. This question becomes even more pressing as we examine bryophyte gene sequences and compare the evidence of genetic change to that of higher plants. Our long-standing assumption that bryophytes have a more fixed genome is rapidly being eroded by electrophoretic evidence that bryophyte populations maintain variability about equal to that of higher plants (Wyatt *et al.*, in press). What then is the expression of all this genetic variability for billions of years?

We know that bryophytes have many phenolic and related biologically active compounds (Markham & Porter 1978; Krzakowa 1980; Asakawa 1981, 1982; Matsuo *et al.*, 1982). Let's present a scenario of the bryophyte as the terrestrial world evolved around it. This tiny plant was an easy to chew morsel for evolving insects, and only those plants with tough cell walls or nasty taste or little energy could survive the onslaught of evolving herbivores. And bryophytes responded. Numerous secondary compounds have been identified by the biochemical researchers working on bryophytes (Asakawa 1982; Mues 1985). So, first, I offer to you that bryophytes spent much of their evolutionary currency on the production of numerous phenolic compounds, not only varying among the species but even within a "species," both geographically and seasonally (Odrzykoski, *et al.* 1981; Sharma & Pathania 1984).

But that's not all. In addition to facing consumption, the bryophyte faced competition in all the "desirable" habitats. It was relegated to dark forest logs and rocks, conifer litter, tree bark, exposed rocks, cold, arctic tundra, deep lake water, acid bogs, and fast streams, to name the more obvious. In each of these habitats, it grew where few vascular plants were successful. Now such an observation would seem to make it obvious that the bryophyte had

something going for it that the vascular plant did not.

It could survive the winter, and even grow on warmer winter days (Oechel 1976). It could tolerate low pH (Clymo 1966), even high copper (Shaw 1987a, b) or iron or cadmium content (Glime & Keen 1984). It could tolerate long periods of desiccation with no underground organ or resting structure to carry it through. It could survive intense light while being dehydrated, a fate that would quickly fade any dried out vascular plant leaf (Glime 1984).

These abilities seem to obviate the need for different metabolic, cellular, or structural adaptations than the absent vascular plants could accomplish. The chlorophyll must have some means of surviving desiccation in the light, with no cuticle or epidermis or palisade to protect it. And certainly some adaptations have been described already. Thick cell walls with small cell lumens, dark-colored pigments in the cell walls and cell sap, white hairs, leaves that twist, numerous methods to help to conserve it, but that seem insufficient to explain the very different survival ability of the bryophyte. Our laboratory group, and Tuba in Hungary (Tuba 1984), have found that it is difficult to extract chlorophyll in acetone immediately in a newly rehydrated moss. After 15 seconds to one minute in water, the extraction will proceed normally. The evidence of this and other observations (Aro 1982) suggests that the chlorophyll decouples from its protein during dehydration. Such a mechanism might change the chlorophyll into a state that is not susceptible to damage by light during the desiccated state.

An alternative suggestion is that papillae, whose function has long puzzled bryologists, might bend light away from a dry moss or change the wavelengths into less harmful ones, thus again protecting the chlorophyll from damage during desiccation. When the moss is hydrated, these

same papillae seem to become transparent, causing the moss to lose its dull appearance and become almost translucent to the observer.

And what enzymes permit the bryophyte to grow during periods of sub-zero weather, even measuring positive photosynthesis in controlled laboratory experiments where surface warming was not a factor?

It appears to me that bryophytes have not been dormant during the evolutionary challenge, but rather have used their evolutionary currency to develop different biochemical strategies, different cell structures, geographically different phenological and life cycle strategies that have rendered them successful throughout time, and will continue to render them successful even as we modify our environment by our own intervention to make it unfit for higher forms of life.

I contend that along with that insect that survives any earthly holocaust to continue to preen its antennae while seated on a rock, there will be a forest of *Ceratodon* to offer it shade and hiding place.

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Authors of Species Reported from Bolivia: Hall of Fame or Infamy

by

Marko Lewis

Until revisions are completed of all genera represented in the Bolivian moss flora, great difficulty will be encountered in correctly identifying Bolivian species and completing a modern floristic treatment. This is in large part due to the great number of superfluous "species" published in the era between 1870 and 1920. The inflation of species names in mosses has also been noted by Touw (1974). As a typical example, Table 1 shows the authors of species of Calymperaceae reported from Bolivia, the dates these taxa were first published, and their present status according to Reese (1961, 1977, 1978).

It appears that of 9 species published prior to 1869, 8 are still considered good species, whereas of 22 species published after this date only 3 (14%) are nowadays accepted and 19 have been reduced to synonymy.

Using this information as a basis we may establish the 'Bolivian Moss Author's Hall of Fame and Infamy'. My nominations for the "Hall of Fame" are Bridel, Montagne and Schwaegrichen, all with perfect records. For the 'Hall of Infamy' I nominate C. Müller, Herzog and Brotherus who amongst them have only 2 currently accepted species out of a total of 14 'new species'. While this is to be considered 'tongue in cheek', it shows that the species published by these authors and others during the same era are to be considered highly suspect. It is a major task and burden of the present generation of moss taxonomists to review and repair the highly suspect taxonomy of the 1870-1920 era.

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Table 1. The status of *Calymperaceae* species recorded from Bolivia based on the revisions by W.C. Reese. (B = date of publication, C = number of currently accepted species, D = number of synonyms)

Author	B	C	D
Bridel	1803-1826	2	0
Schwaegrichen	1823-1824	2	0
Greville	1825	0	1
Montagne	1834-1856	3	0
Martius	1840	1	0
Mitten	1869	0	2
Hampe	1875	0	1
Lindberg	1876	0	1
C. Müller	1879-1900	1	0
Brotherus	1890-1920	1	4
Renauld & Cardot	1894	1	0
Williams	1903	0	1
Herzog	1910-1916	0	4
Total		11	20

Herbario Nacional de Bolivia,
Casilla 28-27, La Paz, Bolivia

Standards for Transfer of Text Files

by
Brian O'Shea

A contribution to the Computer Techniques Column, edited by J.-P. Frahm and B. O'Shea

At the IAB Computer Workshop at Mont Rigi (The Bryological Times 50), various ways of standardising the transfer of data and text between bryologists were discussed.

Whilst the standards for data transfer need more work before they can be defined, text transfer was seen as more straightforward, and I was asked to provide a brief note suggesting a provisional standard method for transferring text between IBM PC compatibles [*1]. Some definitions and explanations follow the provisional standard.

Provisional standard for transfer of text files

1. Text can be transferred as IBM extended ASCII code [*2], unless the destination word processor is known, in which case it can be sent in the appropriate word processor format [*3], the format being clearly stated. If it is a word processor file, the file suffix should indicate the format (e.g. filename.WS for WordStar, filename.WP for WordPerfect). ASCII files should have the suffix ASC, DOC or TXT.
2. 5.25 inch diskettes formatted at low density (360K bytes) [*4] must be used.

Comments and explanations of standard

[*1] IBM PC and compatibles

The majority of 'business' micro computers are compatible with the IBM PC family of machines, and it is this range of machines that the IAB Software Library supports.

However, many other non-IBM

compatible machines exist (e.g. Apple Macintosh, Atari, Commodore Amiga) and it is possible that text can also be transmitted to these machines. There are two factors involved: getting the destination machine to read the diskette, and use of the extended ASCII code (see [*2]).

Machines such as the Macintosh and Atari often do not support a 5.25 inch disk (see [*4]), but if they do, the data format used is not compatible with the IBM format.

Fortunately there are programs available that allow IBM standard disks to be read and written, probably also supporting the IBM extended ASCII character set.

An alternative to possessing a 5.25 inch disk drive is to connect the machine to an IBM compatible via a data communications link. This can be either by a direct 'null modem' cable, or by a normal modem link. A data communications program must be available on each machine supporting a common communications protocol, such as Kermit. Procomm (#13 in the IAB Software Library) is available for this purpose on the IBM PC compatible. If you have no previous experience of this type of process you may need help. Try the computer support staff in your own organisation, or the dealer you bought your machine from.

[*2] IBM extended ASCII code

All text is coded within the computer into a pattern of 0s and 1s - binary digits, or bits. These bits are usually grouped into groups of eight, called bytes, and normally one character of text will be coded into each byte. ASCII (American Standard Code for Information Interchange) is the stan-

dard way within IBM PC compatibles for defining the pattern of bits within each byte that will represent each character. Unfortunately, for historical reasons, ASCII only uses 7 of the 8 bits, giving only 128 different values (2 to the power of 7).

This covers most of the characters used in the USA, but does not include such characters as ° (degree) or £, nor diacriticals such as ç or ä, nor the graphics characters required to draw boxes - so IBM extended the ASCII code to provide another 128 characters by using the eighth bit of the byte. Each pattern also has a decimal value, and lists of the ASCII character set usually show this number: the character ! has the value 33 and é the value 130, for example. (Other manufacturers have extended the ASCII set in different ways, so take care.)

Your computer's support for the ASCII character set thus depends on whether the standard or extended set is used. Word processors that use ASCII as their normal character set, such as PC-Write, usually use the extended set. Those that don't use ASCII, such as Word, WordPerfect and WordStar, allow the conversion of their native-mode files into ASCII, but usually only standard ASCII, (i.e. without the diacriticals). WordStar 4 for instance, will produce a file with ä converted to a, ç to c, £ to # and so on. In this case, you may need to use something like PC-Write (#9 in the IAB Software Library) to reinsert the non-standard characters after the ASCII conversion process has removed them.

[*3] Word processor files

Most word processors do not use the

ASCII character set in a standard way. As an example, WordStar uses the basic standard ASCII (7 bit) character encoding, but uses the eighth bit for its own purposes. As well as recording the characters you type in from the keyboard, word processors need to do other things such as adding extra spaces (which it can later take out if circumstances change) to allow alignment to the right margin, and adding 'soft' carriage return/line feed characters at the end of each line when it 'word wraps' to the next, to distinguish these from the 'hard' carriage returns you put in at the end of a paragraph. It also has print formatting information in the text, for instance for boldening, italics and so on which is held as data that is often made invisible on the screen, or causes the characters to change colour.

If a word processor file is listed on the screen using the DOS TYPE command, or the LIST utility (which is used to display 'readme' files on IAB Software Library disks), these files will probably produce a lot of unusual symbols, and any text may look rather peculiar. Because WordStar bases its text on 7 bit standard ASCII, it is possible using a switch provided in LIST to read a WordStar file by ignoring the eighth bit in each byte, but of the major word processors, only PC-Write uses the extended ASCII set, without additions. WordStar et al. usually support the extended ASCII characters (diacriticals etc.) in a rather obtuse way. Fortunately, non-ASCII word processors usually provide some way of converting their text into ASCII, as well as also providing a 'non-document' mode - a pure ASCII mode required for writing programs, where facilities such as word wrap and margin alignment are unnecessary. This is mentioned further in [*2].

[*4] Diskette formats

The basic IBM PC compatible diskette contains slightly more than

360000 bytes and is known as a 360K diskette. It is formatted with 40 tracks per disk, 9 sectors per track, although older 8 sector disks (c. 320K) can still be used. With the IBM PC/AT range of machines, the capacity was increased to 1.2 Mb by using 80 tracks per surface, and doubling the density. These machines can still read and write to the lower density disks. A diskette is delivered un-formatted, capable (depending on its quality) of being formatted to any of these densities, but diskettes can be unreadable if an AT-style machine is used to format at a lower density, to be used on PC-type ma-

chines. It is usually better to format the disk on the lower density machine. Even then there are sometimes problems with files written by high density machines.

Some machines now only have 3.5 inch 1.4Mb or 700KB disk drives, which were introduced with the PS/2 range. Users of such machines need either a 5.25 inch drive for their machine, or access to conversion facilities. It is likely that 5.25 inch disks will persist for a number of years yet, despite the advantages of the 3.5 inch disk, so having access to both will be useful.

Society News

Bryological Society of Japan

The Bryological Society of Japan elected new officers for Sept. 1989 - Aug. 1991 at the general meeting in Yamaguchi, 5 August 1989:

President: U. Mizushima (Ueno Gakuen College)

Secretary: Z. Iwatsuki (Hiroshima Univ.)

Treasurer: M. Higuchi (Hiroshima Univ.)

Auditor: N. Kitagawa (Nara Univ. of Education)

Editor: H. Kanda (Nat. Inst. Polar Research)

Associate editors: H. Deguchi (Kochi Univ.) and T. Furuki (Natural History Museum Inst., Chiba)

Polish Bryological Society

On the 7th September 1989, during the 25th Congress of the Polish Botanical Society, new officers were elected as follows:

President: Krzysztof Jedrzejko, Department of Pharmaceutical Botany, Silesian School of Medicine, Jagiellonska 4, 41-200 Sosnowiec, Poland

Secretary: Henryk Klama

Council Members: Kazimierz Karczmarsz, Anna Rusinska, Piotr Szmaida, Jan Zarnowiec

New Publications

M.E. Newton, 1989. **A practical guide to bryophyte chromosomes. British Bryological Society Special Volume nr. 20, 22 p., 8 figs. To be ordered from the B.B.S., National Museum of Wales, Cardiff CF1 3NP, U.K. Price 3 pound sterling including postage.**

This is a book to bring an understanding of chromosomes within the grasp of everyone. In explaining the role of chromosomes, it assumes no prior knowledge and guides the reader, step by step, through an examination of the structural and behavioural changes occurring during the bryophyte life cycle. Copiously illustrated it provides detailed instructions for preparing chromosomes for microscopical examination and offers assistance in interpreting results derived from four different staining techniques, one of them the extremely informative Giemsa C-banding technique. Although primarily intended for bryologists, the account will also be useful to general cytologists interested in other plants and animals, and the subject can be studied further by means of a list of additional reading.

continued on next page

New Publications, continued

Moss, Bonkei, Bonsai. *Catalogue of the Europalia 89 exhibition "Japan in Belgium".* French and Dutch language editions, 137 p., 99 figs. To be ordered from the Jardin Botanique National de Belgique, Domaine de Bouchout, 1860 Melse, Belgium. Price B. Fr. 1535 (about US \$ 45), including postage.

The use of bryophytes in Japanese gardening is amply illustrated in this splendid catalogue of the 1989 Europalia exhibition at the National Botanical Garden of Belgium. The most striking feature of the book are the numerous large-sized colour photographs and drawings of Japanese moss gardens and close-ups of individual species, including some superior photographs by the well-known Japanese nature photographer M. Izawa. The text, written by several specialists in the field, provides lots of interesting and valuable information on the philosophical, esthetical and practical aspects of Japanese moss gardening. Warmly recommended!

Book Reviews

R. M. Schuster, 1988, *The Hepaticae of South Greenland*, Beiheft zur Nova Hedwigia, Heft 92. 255 pp, 27 plates, 13 tables, J. Cramer, Gebrüder Bornträger Verlagsbuchhandlung, Stuttgart, Federal Republic of Germany, DM 170,- (\$98.00 US).

This publication is based largely on collections made by the author in southern Greenland in 1982. His study and careful description of the critical taxa were done first on living material allowing observations on the oil bodies and plant color as well as accurate description of the overall appearance of the plants. Also careful dissection of the fresh collections was done in order to find the rare species.

This treatment begins with 21 pages of introductory material, including aspects of the biology of arctic hepatics, and geography and climate of the southern Greenland area. The not insignificant problems of working on arctic plants are emphasized. Following these sections, the methods that were used in the study are briefly addressed. These beginning pages I found enjoyable reading, probably because I personally like Dr. Schuster's writing style. Although the sentences may be somewhat germanic in length, they are full of information - and one must be watchful of the wonderful Schusterian footnotes that often contain the best information. Of course my interest was especially perked when on page 23 I met with the statement that liverworts pose more problems than mosses in the arctic. Now I have been in the field enough times with Dr. Schuster to be convinced that he has great ability to efficiently ignore all mosses, the same ability I have in not seeing any hepatics! So, as I read what the problems are with arctic hepatics, I felt great sympathy, not for Dr. Schuster and hepaticologists, but for myself and fellow muscologists. The problems are the same, and nicely discussed on these pages.

The body of the publication is a detailed treatment of 135 species of hepatics that have been found on southern Greenland. Critical specimens are listed for each species, followed by a discussion of the problems associated with the species or species group. The discussions are very well done, with comparisons made to taxa that could be confused. Although keys are given for a few groups of species, in general no keys are provided. There are 27 plates of drawings, some of these illustrating taxa recently described by the author and Dr. K. Damsholt; others showing critical features such as oil bodies. These drawings for the most part nicely complement the nice illustra-

tions in Schuster's *Hepaticae* and *Anthocerotae* of eastern North America. The memoir ends with an index to taxa and an appendix of localities where specimens were collected.

This work presents much critical data on over a hundred taxa of hepaticae from an area where little work has previously been done. The comments on morphology are carefully done and represent much painstaking microscope work. On the critical side, this treatment will be difficult to use for anyone except the accomplished hepaticologist - I think even we muscologists would find it difficult. I would have liked to have a general key included, and in the cases of the recently described taxa, careful comparison to the author's previous work, especially to the keys, so that comparisons could be more easily made. This criticism is aimed only at usability, and does not in any way detract from the impressive morphological data set given here. The author's ability to synthesize structural modifications in relation to environmental and microhabitat differences makes this work one that will be invaluable to future hepatic taxonomy.

As usual, the quality of the print, the design, and the reproduction of the figures are superb. Although bound in the soft cover typical of journals and many books published by J. Cramer, the binding and size are both attractive. Also as usual, the price is quite high, however the product may be worth the price in this case. This is a book that anyone dealing with arctic cryptogams should have on their book shelves and one that must be in all major libraries.

Dale H. Vitt

Diary

For explanation of acronyms, see *The Bryological Times* 31: 7-8 [1985]
Contributions to the Diary are to be sent to the Diary editor, Dr. D.H. Vitt

1990

July 1-7. IV International congress of systematic and evolutionary biology. University of Maryland, College Park, Maryland, USA. Further information from Arthur Popper, Department of Zoology, The University of Maryland, College Park, Maryland 20742, U.S.A.

July 25-29. The Swiss Bryological and Lichenological Society (with KNNV Bryological and Lichenological Workgroup). Annual excursion. Evolène, Valais (Central Alps). Further information from K. Ammann or P. Clerc, Altenbergrain 21, CH-3013 Bern, Switzerland

August 1-15. BBS, summer field meeting, Ulster: Antrim, Derry and Donegal. Further information from Keith Lewis, Biomedical Library, Queens University, Belfast City Hospital, Lisburn Road, Belfast, BT9 7AB, Northern Ireland *First few days in the Cushendall/Cushendun area in the heart of the glens; the remainder of the first week in Castlerock/Limavady in the County Derry. The second week in north Donegal, headquarters Donfanaghy.*

August 5-9. Bryological and Lichenological Section of the Botanical Society of America. Annual meeting with the American Institute of Biological Sciences. Richmond Center, Richmond, Virginia. Further information from Ann Rushing, Department of Biology, Baylor University, Waco, Texas 76798, U.S.A.

August 6-8. 19th Annual Meeting, Yamanashi Pref. Lake Kawaguchi, at foot of Mt. Fuji, with paper-reading sessions and field study

August 12-19. Helsinki. Congress of East Asiatic bryology. See *Bryol. Times* 50: 5 and this issue. Further information from Timo Koponen, Department of Botany, University of Helsinki, Unioninkatu 44, SF-00170 Helsinki, Finland.

Aug 31- September 2. The Swiss Bryological and Lichenological Society. Mapping weekend with fieldwork in Canton Schwyz and determination work at University of Zürich. Further information from K. Ammann or P. Clerc, Altenbergrain 21, CH-3013 Bern, Switzerland.

September 21-23. Autumn Annual General Meeting of the BBS. A special meeting to be held in Cambridge in honour of Professor Paul Richards and Dr. Eustace Jones. Further information from Philip Stanley, 48 Glisson Road, Cambridge CB1 2HF, U.K. Tel. 0223 460888.

September 24-28. Symposium on Endangered Bryophytes in Europe. Uppsala, Sweden. Further information from Tomas Hallingbäck, Swedish University of Agricultural Sciences, Department of Ecology and Environmental Research, P.O. Box 7072, S-750 07, Uppsala, Sweden.

November 9-11. BBS Weekend Workshop on Bryophyte Photography in Manchester, U.K. Further information from Sean R. Edwards, Manchester Museum, Manchester University, Oxford Road, Manchester M13 9PL, U.K. Tel. 061 442 9346.

December 27-30. American Bryological and Lichenological Society (ABLS) Annual Meeting and Field Days. Walkulla Springs, Florida. Further information from Bill Buck, New York Botanical Garden, Bronx, New York 10458, U.S.A.

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

July 17-18. IAB Symposium: The Biology of *Sphagnum*. Exeter, United Kingdom. Symposium preceded by field meeting on July 12-16. Contributed papers are invited. Offers of papers and inquiries should go to R. 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, United Kingdom. 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.

Colophon

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