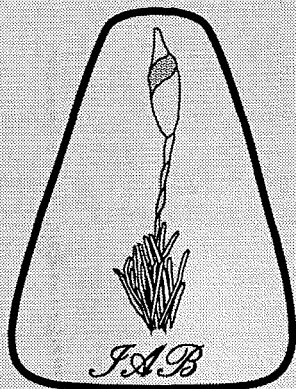


IAB 30 years



a newsletter from
**INTERNATIONAL
ASSOCIATION
OF
BRYOLOGISTS**

The Bryological Times

Issue 100
January 2000
ISSN 0253-4738



*IAB is 30 years old.
Congratulations.
Our president Rob
Gradstein looks back
on its history.*

see p. 2

A new strategy plan for IAB

see p. 4

From the Editor

The Bryological Times is 100! Normally this means that one can slow down a bit and reflect over a long life. But this is not the intention of BT. The newsletter is needed also in the future.

This issue is a special issue where we are celebrating a bit by printing it somewhat nicer than usual. We are therefore bypassing the normal printing stations. But this will only be for this issue. In the future you will receive the times as usual.

We have taken the opportunity to make some layout changes in. Two new columns are introduced. We have also included more pictures than usual. I hope you like these changes.

Who is doing what in IAB?

IAB could not function without the volunteer work of the members. At present, we have a council of elected members and several committees appointed by the council and/or president. In addition, the production and distribution of the Bryological Times has its own organisation.

see p.3

The Bryological Times can, however, not survive without the contributions from all of you, dear colleagues. So, continue to send me material to me or my co-editors. We like to have both small and large things. Notes on address changes, new projects, awards, happenings, courses, hot stuff, etc. Everything is welcome if it has with bryology or bryologists to do. So join us and wish BT welcome to a new stage of life. And help us to keep her there in good shape.

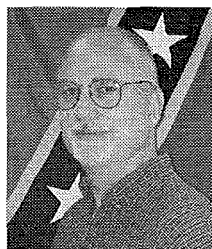
Finally I like to thank all my co-editors and other that contribute to the production of BT, from the authors, to the editors, printers, and mailers. Without you BT would not exist.



Lars Söderström

New Columns and Column Editors

In this issue of the Bryological Times we introduce two new columns "Theses in Bryology" and "Student Profiles".



THESES IN BRYOLOGY

Bill Buck, New York, will collect and present theses published in bryology. Please send all kind of theses to him to make them more known internationally (see BT 99 p. 17). Bill is presenting the column on p. 12 together with some theses.

Jennifer Doubt, Edmonton, will edit the student profiles. She is a student herself and the target for the first profile. Students, send a presentation of yourself, with a couple of pictures, to Jennifer, for inclusion in her column. Supervisors, please push your students to present themselves. You find Jennifers address and the presentation of her on page 6.

Student Profile



International Association of Bryologists (IAB) is an organisation open for all interested in bryophytes. For membership, contact Sandi Vitt, Dept of Biol. Sci., Univ. of Alberta, Edmonton, Alberta T6G 2E9, Canada (svitt@ualberta.ca). Visit also our web site at <http://www.devonian.ualberta.ca/iab/>. Bryological Times is issued 4 times per year.

IAB 30 YEARS

GLIMPSES FROM THE PAST

The **International Association of Bryologists**, which entered the new Millennium just after its 30th anniversary, was established August 1969 at Seattle (U.S.A.) during the 11th International Botanical Congress. The first executive committee consisting of William C. Steere as president, Stanley W. Greene and Zenonoske Iwatsuki as vice-presidents, and S. Rob Gradstein as secretary served for six years, until the 12th IBC in St. Petersburg (then "Leningrad") in 1975 when Lewis E. Anderson was elected president and Peter A. Florschütz and I. I. Abramov vice-presidents. Rob Gradstein continued as secretary for another twelve years and was succeeded by Dale H. Vitt during the 14th IBC in Berlin in 1987.

The 1975 meeting in St. Petersburg was of particular importance in the history of the I.A.B. because it saw the installation of the

viewpoint. We only need to look at the work of Bridel and Muller to see this; they were followed somewhat later by such internationally minded bryologists as Mitten, Paris, Stephani, Brotherus, Fleischer, Dixon and Bartram, among others. Still more recently, we can cite the essential reference works by Bonner and by Van der Wijk, Margadant, and Florchutz, again, on a world-wide basis.

Perhaps the most ardent, persuasive, and articulate exponent of international bryology in this century has been Frans Verdoorn, and his influence still continues. Although his effort to bring about a more international outlook in bryology were slow in coming to fruition, he nevertheless had a very direct effect on my own thoughts on joining with friends in other countries to form an international association of bryologists.

The obvious and long-standing need for an international group of bryologists became an unofficial topic for discussion at the Pacific Science Congress in Tokyo in 1966, where a group of us met spontaneously to see what we could do to promote the idea. This informal meeting of some 15 individuals, both bryologists and lichenologists, resulted in the establishment of an organ-

ized committee consisting of myself as chairman and with Dr. Zenonoske Iwatsuki and Dr. Stanley Greene as vice-chairmen. To us was assigned the responsibility for drawing up plans and drafting a tentative constitution for our proposed International Association of Bryologists. We carefully made our plans during the next two years, we notified our fellow bryologists of the new organization and, finally, at a special meeting of the American Bryological Society held during the XI International Botanical Congress in Seattle in 1969, the chairman (Dr. W. B. Schofield) generously granted time during his program for me to present the proposal for our new association. Most fortunately, Frans Stafleu came to this meeting in support of our plans. Just as important, he pro-

posed that the Association be placed at least temporarily under the wing of the International association for Plant Taxonomy, with the privilege of using the pages of *Taxon* regularly for announcements and news of bryological activities. Thus the *Bulletin of Bryology* was born. At the special meeting in Seattle, then, the International Association of Bryologists became a reality, instead of an unfulfilled dream of several years' standing. The members of the original organizing committee were elected on the spot as the first officers of I.A.B. by its members present, with myself as president and Dr. Greene and Dr. Iwatsuki as vice-presidents. Some months later, Dr. Frans Stafleu suggested that one of the graduate students at the University of Utrecht, S. Rob Gradstein, would be an appropriate person to serve as Secretary of the new association, because of his proximity to the editorial activities of *Taxon* as well as the administrative offices of I.A.P.T. Dr. Gradstein has carried out his mission since 1971. In addition to all his responsibilities for handling correspondence and financial matter, he also prepared at regular intervals the *Bulletin of Bryology*, and organized for publication the first international "Directory of Bryologists and Bryological Research". From 1974 to 1975 Dr. Gary L. Smith served as editor of the *Bulletin of Bryology*.

By the terms of the constitution of the International Association of Bryologists, the *Bulletin of Bryology* can never become an international journal of bryology, in the sense of publishing original monographs and other contributions, yet we most earnestly hope that it may promote greater harmony and understanding among the bryologists of our rapidly diminishing world, simply through the dissemination of accurate and important as the field of bryology advances, especially if we are to prevent avoidable and unnecessary duplication of research effort. If the International Association of Bryologists can serve as a bridge for friendship and cooperation between bryologists of different nations, different cultures and different kinds of governments, our

most earnest aspirations for the organization will have been fulfilled."

"VIVAT ET FLOREAT SOC. INT. BRYOLOGICA" [S. Rob Gradstein].

BULLETIN OF BRYOLOGY

Bulletin of Bryology (BB) was the first newsletter of the IAB and appeared biannually in *Taxon* during 1971-81 (editors S. Rob Gradstein, Gary L. Smith (1974-75)) and then again during 1986-89 (editor Diana G. Horton). When *The Bryological Times* (BT) was established in 1980, it was thought that there might be a need for two newsletters, one for rapid publication of informal news items (BT) and one for formal communication of bryological activities of major international importance to the botanical world (BB). Publication of the two newsletters went on side by side for five years (with an interruption during 1982-86) until 1989 when the *Bulletin* was discontinued.

first officially elected international Council, representing ten different nations, and the official acceptance of the Constitution. At the occasion of this important historical event, the late William C. Steere delivered a presidential address in which he gave vivid, personal account on the origin of the IAB. The celebration of the 30th anniversary of the IAB seems a suitable occasion for a reprint of Bill Steere's historical speech. The slightly abbreviated text appeared earlier in *Bulletin of Bryology* VIII (see text box).

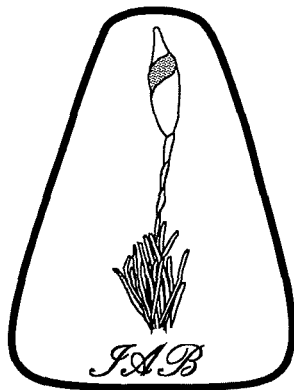
"International bryology is by no means a new concept: it has been a dream of many bryologists for a long, long time. The International Association of Bryologists is simply the end-product of many generations of hopes and aspirations. Even the earliest prominent bryologists, from the time of Schwaegrichen onward, have approached professional bryology from a world-wide

viewpoint. We only need to look at the work of Bridel and Muller to see this; they were followed somewhat later by such internationally minded bryologists as Mitten, Paris, Stephani, Brotherus, Fleischer, Dixon and Bartram, among others. Still more recently, we can cite the essential reference works by Bonner and by Van der Wijk, Margadant, and Florchutz, again, on a world-wide basis. Perhaps the most ardent, persuasive, and articulate exponent of international bryology in this century has been Frans Verdoorn, and his influence still continues. Although his effort to bring about a more international outlook in bryology were slow in coming to fruition, he nevertheless had a very direct effect on my own thoughts on joining with friends in other countries to form an international association of bryologists.

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Rob Gradstein is the president of IAB and a former editor of the *Bryological Times*.

IAB COUNCIL AND COMMITTEES



Below is a list of IAB Council, IAB standing committees and the editors of the *Bryological Times*. Only email addresses are given but full addresses are found on IAB home page (<http://www.devonian.ualberta.ca/iab/>) or from Sandi Vitt, Dept. of Biol. Sci., Univ of Alberta, Edmonton, AB T6G 2E9, Canada (svitt@ualberta.ca).

IAB COUNCIL

President: Rob Gradstein, Göttingen, Germany (sgradst@gwdg.de).

1st vice president: Wilf B Schofield, Vancouver, Canada (wilfs@unixg.ubc.ca).

2nd vice president: Zen Iwatsuki, Hiroshima, Japan (zen@sun-inet.or.jp).

Secretary-Treasurer: Dale H. Vitt, Edmonton, Canada (dale.vitt@ualberta.ca).

Editor of BT: Lars Söderström, Trondheim, Norway (lars.soderstrom@chembio.ntnu.no).

Councillors: Bill Buck, New York, USA (bbuck@nybg.org).

Tong Cao, Shenyang, China (ifp@iae.syb.ac.cn).

Barbara Crandall-Stotler, Carbondale, USA (crandall@plant.siu.edu).

Hironori Deguchi, Hiroshima, Japan (hdeguch@ipc.hiroshima-u.ac.jp).

Efrain DeLuna, Xalapa, Mexico (deluna@ecologia.edu.mx).

Jan-Peter Frahm, Bonn, Germany (frahm@uni-bonn.de).

Janice Glime, Houghton, USA (jmglim@mtu.edu).

Mikhail Ignatov, Moscow, Russia (arcto@eignatova.home.bio.msu.ru).

Royce Longton, Reading, Britain (r.e.longton@reading.ac.uk).

Rod Seppelt, Kingston, Australia (rod.seppelt@antdiv.gov.au).

ENDANGERED SPECIES COMMITTEE

Chairman: Tomas Hallingbäck, Uppsala, Sweden (tomas.hallingback@dha.slu.se).

René Belland, Edmonton, Canada (rbelland@ualberta.ca).

Patricia Geissler, Geneva, Switzerland (geissler@cjb.unige.ch).

Rob Gradstein, Göttingen, Germany (sgradst@gwdg.de).

Nick Hodgetts, Peterborough, Britain (hodget_n@jncc.gov.uk).

Celina M. Matteri, Buenos Aires, Argentina (cmatteri@muanbe.gov.ar).

Tamas Pócs, Eger, Hungary (colura@gemini.ektf.hu).

Heinar Streimann, Canberra, Australia (heinar@kite.anbg.gov.au).

Ben Tan, Singapore (dbsbct@nus.edu.sg).

HEDWIG MEDAL COMMITTEE

Chaired by the president holding office in the immediate 2 years before presentation: Next medal presented 2005. Other members will be appointed by the council in 2003.

STANLEY GREENE AWARD COMMITTEE

Chaired by the secretary-treasurer: Dale H. Vitt, Edmonton, Canada (dale.vitt@ualberta.ca).
Other members to be appointed soon.

RICHARD SPRUCE AWARD COMMITTEE

Chaired by the 1st vice president: Wilf B Schofield, Vancouver, Canada (wilfs@unixg.ubc.ca).
Other members to be appointed soon.

HATTORI PRIZE COMMITTEE

Chaired by the 2nd vice president: Zen Iwatsuki, Hiroshima, Japan (zen@sun-inet.or.jp).
Other members to be appointed soon.

EDITORIAL BOARD OF BRYOLOGICAL TIMES

Editor

Lars Söderström, Trondheim, Norway (lars.soderstrom@chembio.ntnu.no).

Assistant Editors

Terry Hedderson, Cape Town, South Africa (thedders@botzoo.uct.ac.za).

Henrik Weibull, Uppsala, Sweden (henrik.weibull@nvb.slu.se).

Regional Editors

René Belland, Edmonton, Canada (rbelland@ualberta.ca).

Tong Cao, Shenyang, China (ifp@iae.syb.ac.cn).

Inés Sastre-De Jesús, Mauagüez, Puerto Rico (I_Sastre@rumac.upr.clu.edu; at present in Mexico, sastre@ecologia.edu.mx).

Ray Tangney, Dunedin, New Zealand (ray@phyton.otago.ac.nz).

Ben Tan, Singapore (dbsbct@nus.edu.sg).

Column Editors

Conservation Column: Tomas Hallingbäck, Uppsala, Sweden (tomas.hallingback@dha.slu.se).

Literature Column: Johannes Enroth, Helsinki, Finland (johannes.enroth@helsinki.fi).

Student Profile: Jennifer Doubt, Edmonton, Canada (jdoubt@ualberta.ca).

Theses in Bryology: Bill Buck, New York, USA (bbuck@nybg.org).

Tropical Bryology: Tamas Pócs, Eger, Hungary (colura@gemini.ektf.hu).

GRADUATE ASSISTANTSHIP

MS or PhD graduate student assistantship available immediately. An assistantship to study the use of moss to biomonitor heavy metal pollution (emphasis on mercury) within Pennsylvania is available immediately in the Department of Plant Pathology, Pennsylvania State University, University Park, PA (the main campus). Applicants must have prior experience and/or coursework involving mosses. Beginning stipend is \$5,175 per semester. Tuition is paid for PhD students. Applicants must enroll in the Department of Plant Pathology. Duties include assisting annually in Forest Pathology, a 2-credit undergraduate course taught each Spring semester. Please contact D.D. Davis at ddd2@psu.edu for more details.

STRATEGY PLAN FOR INTERNATIONAL ASSOCIATION OF BRYOLOGISTS 2000-2008

Dear IAB members,

As newly elected President I would like to take the opportunity to wish all members a very happy and prosperous new year 2000 - cheers! Our organization is still a young one, yet has achieved a lot over the past thirty years. We are organizing biennial international meetings and symposia, we publish the highly successful newsletter "The Bryological Times" and various other publications, we have international committees on which bryologists from all over the world work on common goals, we promote research by our Stanley Greene awards, and we recognize excellence in bryology through the Spruce and Hattori awards and the Hedwig medal. Thanks to the good efforts of our secretary-treasurer Dale Vitt we have developed a secure financial basis for our organization.

The beginning of the new millenium is a good reason for a fresh start, a suitable moment to reconsider our goals and reset the directions for the International Association of Bryologists. What is our mission, what are our goals, how are we going to achieve these? There are many ways to try to bring bryologists together and to promote the study of bryophytes - how shall we proceed?

The way we want to move onwards in IAB is reflected in this **Strategic Plan** that I am proud to present to you. The plan, prepared by a small committee of IAB members consisting of Bill Buck, Norton Miller, Lars Söderström, Dale Vitt, and myself, defines the ways that we believe IAB might achieve its mission in the next eight years. The goals

spelled out in the plan may not seem to be all that new, nor have all the means to achieve these been determined. Yet, I believe that the importance of the plan lies in its comprehensiveness and in the synthetic way in which the directions of IAB are presented. I suggest all our council members should carefully read the plan and help us in achieving these goals. I would greatly welcome your comments or suggestions.

May I finish this letter by thanking my fellow members of the Strategic Plan Committee for the good work that they have done in putting the plan together during a brain-storming weekend in Edmonton, in early December. A special word of thanks goes to Bill Buck who most efficiently took care of the final writing of the document.

Rob Gradstein

GOALS

1. Encourage international cooperation among bryologists.

A. Establish a code of ethics and provide recommended guidelines for international field work with bryophytes.

I. Write code of ethics. Bill Buck will, with help of Lars Söderström, write a proposal to ECCB and the code will be approved and presented to all IAB members by July 2001.

II. Update country-specific guide to regulations. Jan-Peter Frahm has written such a guide, which is published in a special issue of the Bryological Times. This guide must

be updated. The updated version will be finished by January 2002.

III. Produce and maintain web-based database. The country-specific guide will be published and maintained on IAB Web site.

B. Produce a timely and comprehensive list of funding opportunities for international exchanges of bryologists.

I. Assemble initial list. Rob Gradstein will assemble the list and present it by January 2002.

II. Distribute updates. The list will be continuously updated.

C. Develop an international directory of bryological expertise.

I. Re-profile current expertise list categories. The Secretary-Treasurer has collected information about the bryological interests of members. This information will be updated with information on teaching and supervising capacity.

II. Produce and maintain directory on the web.

2. Promote communication among bryologists.

A. Sponsor international meetings acting upon proposals of members and officers. The 1st vice president will be responsible for the meetings in collaboration with the local representative.

I. Develop plan and timeline for biennial meetings. Proposals for meetings will be accepted on the base of scientific credibility, need, and potential for high public visibility. The 1st vice president, will present a plan for the near future as soon as possible.

B. Publish *The Bryological Times*, with $\pm$ 50 pages per year, striving for 4 issues per year.

I. Initiate graduate student profiles. A column editor, Jennifer Doubt, Canada, is appointed and the first two presentations appears in this issue.

II. Provide expanded synopses of published research in a readable, accessible format. The first ones are planned to appear in one of the next issues of the Bryological Times.

III. Build and strengthen a network of regional editors. At present five regional editors are appointed, René Belland, Canada, Ines Sastre-DJ, Puerto Rico, Ray Tagney, New Zealand, Ben Tan, Singapore, and Cao Tong, China. We are at present searching for a regional editor also in Africa.

IV. Appoint column editors to cover topics currently not emphasized in *The Bryological Times*, e.g., physiology, molecular biology, genetics. New columns will be created upon suggestion from the members and col-

umn editors will be appointed for two years at a time, in accordance with our constitution. At present we have a literature column (edited by Johannes Enroth, Finland), a tropical bryology column (edited by Tamas Pócs, Hungary), a conservation column (edited by Tomas Hallingbäck, Sweden), a student presentation column (edited by Jennifer Doubt, Canada) and a Theses in Bryology column (edited by Bill Buck, USA).

C. Expand web presence.

I. Appoint web manager.

D. Keep membership list current and available to members.

Our Secretary-Treasurer will take care of it.

3. Expand visibility of bryology and the IAB.

- A. Initiate membership campaign**
- I. Produce brochure about IAB. Dale Vitt, Canada, will produce the first one to be used.
 - II. Distribute brochure through other bryological societies, both local and national/international.
- III. Add 300 new members**
- B. Explore linkages with international, non-bryological societies, such as IUCN, IUBS, BGCI, and Intecol.**
- Our president, Rob Gradstein, Germany, will organize the contacts and present the results by August 2005.
- C. Appoint a public relations officer.**
- I. Identify targets for press releases
 - II. Identify newsworthy projects
 - III. Release press bulletins for bryological events

4. Initiate new educational opportunities for bryologists.

- A. Develop and implement a series of workshops (possibly in association with the biennial meetings) on current topics in bryology. The series would be called "The IAB Workshop on ..."**
- I. Develop plan.
 - II. Implement plan.
- B. Develop educational networking program for bryologists.**
- A councilor will coordinate this item and present a plan to IAB by September 2000.
- I. Compile list of laboratories that would be willing to have bryological interns.
 - II. Initiate an "IAB Intern" program, to be funded by IAB, to be used, preferably with matching funds, to allow bryologists to learn new techniques by working in other laboratories.
- C. Write status and trends document ("white paper") on bryology that will be distributed to educational and other institutions to provide reasons for adding bryological positions.**
- I. Write document.
 - II. Identify target audience and distribute.
 - III. Translate into additional languages.
- Norton Miller, USA will initiate this series of "white papers".

5. Foster bryological research collaboration, especially at the international level.

- A. Develop and implement consistent evaluation procedure for remodeling the Stanley Greene Awards, with the following principles in mind:**
- a. Provide travel money to increase research capabilities.
 - b. Provide travel money to develop new international linkages.
- Dale Vitt, Canada, will work out a new proposal to be ready by January 2002.
- B. Encourage submission of international bryological projects for potential IAB endorsement.**
- Dale Vitt, Canada, and Rob Gradstein, Germany, will look for 5-10 projects to be endorsed by January 2002.
- C. Support the compilation or revision of international documentation projects in bryology.**
- Note: These should be compilation projects, web-based when possible, not primary research. Previous examples include "The Conspectus of Bryological Taxonomic Literature," "The Compendium of Bryology," and "Glossarium Polyglottum Bryologiae."

6. Recognize excellence in bryology.

- A. Continue to award the Spruce, Hedwig, and Hattori awards.**
- B. Disseminate information about the recipients of these awards to appropriate, non-bryological journals.**

7. Disseminate bryological information.

- A. Be actively involved in the selection of contents and editing of a review series in bryology.**
- Note: To date this series has been "Advances in Bryology."
- B. Develop contract with publisher for such a review series on the basis of the following guidelines.**
- a. Publication will be high profile in terms of contents.
 - b. Publication will be well distributed and marketed.
 - c. Publication will be reasonably priced, and at a reduced cost to IAB members.
- d. Publication will have a contemporary format.**
- e. Publisher will provide accountability in terms of sales and distribution.**
- f. Publisher will provide percent of profit to IAB.**
- Bill Buck, USA, Norton Miller, USA and Royce Longton, Britain, will find a publisher meeting our requests.
- C. Develop bryophyte thesis resource and repository center.**
- I. Collect theses.
- Note: The New York Botanical Garden has agreed to be the repository.
- II. Publish synopsis of theses in The Bryological Times.**
- Bill Buck, USA, is collecting the thesis and acting as a column editor presenting them in the Bryological Times.
- D. Publish abstracts of IAB-sponsored and endorsed meetings, preferably in an independent, continuous series.**
- These abstracts (cf. 4A) will be published as a supplement to The Bryological Times.

8. Promote the conservation of bryophytes.

- A. Maintain standing committee on endangered bryophytes, with a link to the IUCN.**
- I. Revitalize mandate with a structured plan from the Committee.
 - II. Continue the surcharge on IAB dues (currently US\$1) to implement the structured plan.

9. Insure the financial stability of IAB in order to fulfill the mission of the society.

- A. Establish integrated regional centers to collect and manage dues in local currencies that report biennially to the Council through the secretary-treasurer.**
- B. Regional directors shall develop a local long-term plan in conformity with IAB strategic plan.**
- C. Manage IAB funds in order that C\$5000-10,000 will be available biennially to fulfill strategic planning goals.**

Student Profile

ed. Jennifer Doubt

"Bryology Lesson #1: Bryophytes are easy to pick up, and difficult to get rid of"

Jennifer Doubt

University of Alberta

Year 4 M.Sc. candidate

Dept. of Biol. Sci., Edmonton, Alberta

T6G 2E9, Canada

email: jdoubt@ualberta.ca

Bryological focus:

**Community Ecology
Conservation**

Supervised by **Dr. Dale H. Vitt**

Background

I grew up in the Upper Ottawa Valley, Ontario, Canada, and completed a BSc. in Botany at the University of Guelph, Ontario. My first botanical employer was the Cliff Ecology Research Group (CERG), headed by my first ever ecology Prof – Dr. Doug Larson – at Guelph. I spent the summer feeding dyes to the roots of potted cedars and recording the dye paths in *thousands* of hand-drawn cross-sections. My hands and face were spotted red and blue for four months! Every day Doug would say "You see Jenn – **this** is what science really is", just in case I expected biology to be glamorous.

In the three years that followed, I worked on many CERG projects along the Niagara Escarpment. I worked on alvar floras, cryptoendolithic algae, and root anatomy of

Jennifer Doubt, Edmonton, Canada

eastern white cedars – and never on mosses. I learned to love microscopy, floristics, and fieldwork, however, and when I discovered that the University of Alberta had money for me to work in the Rocky Mountains, I thought maybe bryology was for me.

I had no idea what I was getting into. For my MSc. thesis, I spent *one* field season collecting mosses in a *single* National Park. Two and a half years later, I finished the identifications. That's how I learned bryology lesson #1: mosses are easy to pick up, and difficult to get rid of.

Future Plans

I would love to address some of the many taxonomic questions raised through my hours at the microscope by doing a Ph.D. On the other hand, my M.Sc. has taken so long that it's difficult to imagine starting an even bigger project. An income would be – well, nice, and if I found a good job in botany or ecology I would be very happy to work. I also look forward to learning the moss flora of my home province and of other regions.

On Bryology

It's frustrating that so few people are employed bryology in Canada, and I am concerned that even with my training and enthusiasm I will have to make mosses my hobby instead of my career. The Canadian Museum of Nature, which once supported a full-time bryologist and a large, active cryptogamic herbarium, has had no bryologist for several years. The herbarium no longer accepts new accessions. I argue that National institutions like the CMN should set an example for universities and conservation agencies nationwide by recognizing bryophytes as a significant component of Canadian biodiversity just as worthy of research and conservation as all plants

and wildlife.

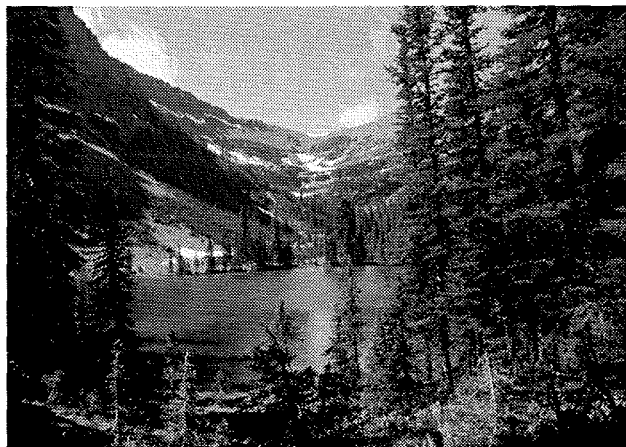
Politics and funding aside (supposing they *can* be set aside) there are so many exciting things to be done in bryology! So many regions haven't been adequately collected. Awareness of these inconspicuous (and oh-so-beautiful!) plants needs to be raised, and their conservation encouraged. All bryologists I have met display an infectious passion for their field and welcome my participation in it. I'm extremely proud to be part of their community.

Thesis research

Patterns of moss rarity and richness in Waterton Lakes National Park, with implications for bryophyte conservation management

Parks must balance conservation and recreation mandates, necessitating the judicious selection of sites for conservation and development. The conservation of inconspicuous and difficult-to-identify taxa, such as bryophytes, may suffer unless new tools facilitating site evaluation are devised. Bryophytes have very specific habitat and microhabitat affinities, with rare bryophytes often occurring in rare habitats. Ecological studies that quantify species diversity along environmental gradients may thus be useful in predicting species diversity given environmental conditions. The purpose of this study was to quantitatively link moss species frequency (rarity) and diversity with habitat parameters in order to facilitate park conservation management.

All moss species in 125 representative sites in Waterton Lakes National Park, Alberta – a small (530 km²) but environmentally and biologically diverse mountain park in Canada's southern Rocky Mountains. Environmental variables including moisture, light, temperature, habitat complexity, substrate characters and biotic factors were estimated at each site, using easy, inexpensive methods. Over 270 moss species were recorded, including several new Alberta records and provincially rare species. Sixty percent of the species were locally rare, while relatively few species were common. Site richness varied from 3 to 55 species. Patterns of richness and rarity directed the creation of management recommendations for Waterton Lakes National Park. Using the techniques used in this study, valuable bryophyte management recommendations can be produced for any park, facilitating the inclusion of bryophytes when making site conservation decision



For my MSc. thesis I (right) studied patterns of moss diversity and rare moss species in Waterton Lakes National Park (left).

Student Profile

ed. Jennifer Doubt

"Bryology Lesson #2: Bryophytes are able to move quite fast, but you seldom see them fly"

Kristian Hassel
Norwegian University of Science and Technology (NTNU)
Year 2 Ph.D. student
Dept. of Botany, N-7491 Trondheim, Norway
email: kristian.hassel@chembio.ntnu.no

Bryological focus:
Population Ecology and Genetics
Life History Strategies

Supervised by Dr. Lars Söderström

Background

I grew up in a suburb south of Trondheim, and I've been studying at NTNU since 1992. I started with biology in the first place because I was curious and enjoyed recognizing and putting names on "things". At first, I was mostly interested in birds (unusual!) but that changed after a while and I found new challenges in the field of botany. After some years at the university I took a cryptogam course held by a strange Swede, who suggested that I do an MSc. thesis with him. That's how it started.

I did my MSc. thesis on the distributional expansion of *Pogonatum dentatum* (Brid.) Brid. along forest roads. I investigated the occurrence of *P. dentatum* in the diaspore bank in relation to road age and distance from above-ground patches. I also studied field establishment of *P. dentatum* from spores (published in Lindbergia vol. 23 and 24).

After I finished my thesis I was hired by the Norwegian Institute for Forest Research to work on a forest biodiversity project. I did two months of fieldwork in northern Norway (Troms), and spent twice that time in the laboratory doing the determination work (see bryology lesson #1).

Future Plans

My main goals are to finish my thesis and to continue to work with the fascinating bryophytes. Hopefully I'll get a job where I'm able to do so.

Kristian Hassel, Trondheim, Norway

On Bryology

My feeling is that the profile of cryptogams in general and of bryophytes and lichens in particular has increased in recent years. In nature surveys they have been shown to be more useful as indicator species than other plant groups. For that reason I think/hope the demand for bryologists will increase in the future.

I also think that bryophytes will become more popular study subjects, especially in the border zone between ecology and genetics. Because the haploid life-stage dominates, they are ideal model organisms for examining the relative importance of genetic and environmental influences.

Thesis Research

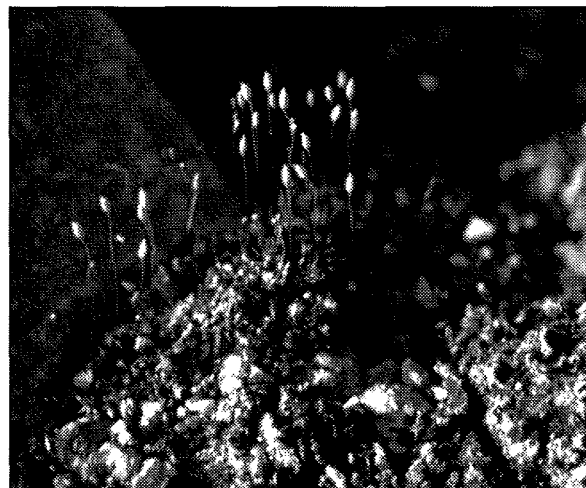
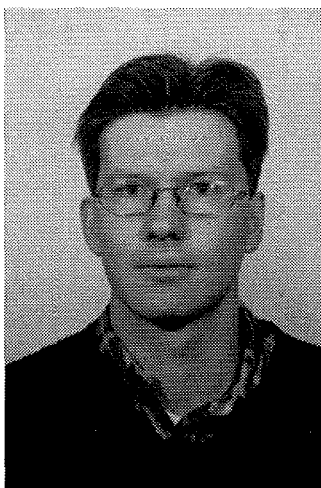
Dispersal in expanding species: Consequences for life history variation and genetic structure

The main objective of this study is to better understand the biological processes behind the distributional expansion of selected bryophyte species. Expansion can occur by random or directional dispersal. The latter may be subdivided into "broad front" and "stepping stone" types. Different types of dispersal may take place simultaneously at different geographical scales (e.g. random at a small scale while directional at a larger scale). Each type of

dispersal affects metapopulation structure differently in terms of genetic variation 1) within and between populations and 2) at the core and the edge of the distribution area.

This project also examines the source of variation in life history characters between mountain and lowland populations. Observations indicate, for example, that sexual reproduction is more common in lowland than mountain populations in *Pogonatum dentatum*. I want to determine whether this variation results from genetic or environmental variation.

Two pairs of expanding species were selected for this study. The native mountain species *Polytrichum hyperboreum* R. Brown and *P. dentatum* have both extended their distribution into lowland areas of Fennoscandia during the last fifty years. The neophytes *Campylopus introflexus* (Hedw.) Brid. and *Orthodontium lineare* Schwaegr. were first recorded in Europe in 1941 and 1910 respectively. The project aims to 1) quantify life history and genetic variation within and between mountain and lowland populations, 2) determine if expansion is random or if it takes place by "broad front" or "stepping stone" dispersal, and 3) examine literature and herbarium records to find possible routes and patterns of the expansions.



I (left) have studied the population biology of *Pogonatum dentatum* (right) for my MSc. thesis and that species is also included in my current project.

GENUS *BAZZANIA* WANTED

I am a graduate student at the Instituto de Ecología, Xalapa, Veracruz (Mexico). My thesis topic will be a revision of the genus *Bazzania* in Latin America. I would be interested in receiving specimens of this genus from all parts of the world.

Thanks in advance.

Carmen M. Reyes-Colón, Instituto de Ecología, AC, Apartado 63, Antigua carretera a Coatepec, Km 2.5, Xalapa, Veracruz, Mexico 91000

THE FIRST BRYOLOGICAL MEETING IN AUSTRIA

Austria had a great history in bryology, but what's about the present? The first meeting of Austrian bryologists for more than hundred years was held from September 25th to 27th, 1998 at Vienna University (Institute of Plant Physiology). Many of the Austrian bryologists reported on their present work. This has now been published. The contents of the book show the broad variety of interests in the field of bryology in Austria, despite the fact that not a single bryologist is fully employed by public institutions

(e.g. museums or universities). In consequence of the enormous interest not only from bryologists but also from scientists in adjacent fields there are plans to continue with regular meetings.

Harald Zechmeister, University of Vienna, Institute for Plant Physiology, Dept. for Vegetation Ecology, Althanstraße 14, A-1091 Vienna, Austria, Tel.Fax.: +43 1 8792994, <http://www.pph.univie.ac.at/bryo/zech.html>

NEWS FROM THE BRYOLOGICAL SOCIETY OF JAPAN

The Bryological Society of Japan (BSJ) has elected new officers for January 2000 - December 2001, at the general meeting in Wakayama, 21 - 23 August, 1999.

President: Y. Asakawa (Tokushima Bunri Univ.).

Secretary: H. Deguchi (Hiroshima Univ.).

Treasurer: T. Yamaguchi (Hiroshima Univ.).

Auditor: T. Furuki (Natural History Museum and Institute, Chiba).

Editor: J. Hasegawa (Minami-Kyushu Univ.).

Associate Editors: M. Higuchi (National Science Museum), T. Imura (National Institute of Polar Research).

All communications should be addressed to the Secretary: Bryological Society of Japan, Department of Biological Science, Faculty of Science, Hiroshima University, Kagamiyama, Higashi-hiroshima-shi, Hiroshima-ken, 739-8526 Japan, e-mail: hdeguch@ipc.hiroshima-u.ac.jp.

THE 28TH ANNUAL MEETING

The Meeting was held at Shirahama-onsen, a famous hot spring in Wakayama, SW-Japan, on 21-23 August, 1999. More than 70 members attended from all over Japan as well as an attendee from Spain. The events included (1) a paper reading session with 12

presentations, (2) a poster session with 3 posters, (3) a society banquet, full of delicious seafood, (4) a business meeting, and (5) an excursion to Yasukawa-valley, a warm-temperate evergreen forest area with rich bryophyte flora in Wakayama-Pref. In the business meeting, the president, Dr. N. Kitagawa proposed Dr. Z. Iwatsuki of the Hattori Botanical Laboratory to be an honorary member of our Society. The proposal was accepted unanimously.

THE 29TH ANNUAL MEETING

The next annual meeting will be held at Tsukuba, on 4-6 August, 2000. The events include a paper reading session, a poster session, a society banquet, a business meeting, and a field excursion. All inquiries about the meeting should be addressed to H. Taoda, Forestry and Forest Products Research Institute, P. O. Box 16, Tsukuba-Norin, Ibaraki 305-8687, Japan (e-mail: taoda@ffpri.affrc.go.jp).

BRYOLOGICAL RESEARCH

"Bryological Research" is published by our Society, three times a year, continued from "Proceedings of the Bryological Society of Japan". Volume 7(7) and 7(8) were published in May and in October respectively. They contain original research articles

Jiro Hasegawa

SOME NEWS FROM THE SOUTHERN HEMISPHERE - MORE TO THE POINT, TASMANIA

During 1999 a new Bryophyte Interest Group - BIG for short - was formed in Tasmania. This arose from an influx of people to the University of Tasmania: the return of Emma Pharo from University of Alberta, Canada, to a teaching post in Geography and Environmental Sciences; Pep Blanks moving from Melbourne to begin a PhD study, also in Geography and Environmental Sciences; Esme Atkinson, who has completed an Honours Botany degree with Paddy Dalton. Also in the fold are Alex Buchanan, Jean Jarman and Lyn Cave from the Tasmanian Herbarium; David Ratkowsky, who claims to be concentrating on fungi now after many years of effort on bryophytes and lichens, not to mention mathematical statistics; Jenni Whinam and Mike Askey-Doran from the Na-

tional Parks Service; Tony Moscal, and Rod Seppelt. We have had several informal gatherings at the University to exchange ideas and information, discuss problems, and just get together. A casual barbeque with hardly any discussion of bryophytes was held at Rod Seppelt's house just before Christmas. A field outing to the south east coast near Hobart is planned for February 2000, to start the year of activities. We unashamedly modelled our BIG on the successful and informal Wellington Moss Mob in New Zealand, with no fixed agenda and with the sole aim of bringing together people interested in lower plants.

If any bryologists happen to be visiting Tasmania we would welcome the chance to hold a get together around their visit. For information contact either Rod Seppelt (rod.seppelt@antdiv.gov.au) or Paddy Dalton (p.j.dalton@utas.edu.au)

Rod Seppelt

Rod Seppelt is a Councillor of IAB. His address is Australian Antarctic Division, Channel Highway, Kingston 7050, Tasmania, Australia



OUTLINE OF THE ACTIVITIES AND ADVANCES OF BRYOLOGICAL RESEARCH IN CHINA DURING 1990's

Tong Cao and Yuanming Zhang

At the end of 20 century and beginning of a new millennium, looking back the last ten years, we should be proud of the achievements and advances in bryological researches in China, which are results of the efforts of all Chinese and foreign bryologists who have made contributions to understanding Chinese bryoflora. At the same time, we also strongly feel that there is still a long way to go in bryological studies in China, one of countries with the richest diversity of bryophytes in the world.

BRYOLOGICAL MEETINGS

The IAB International Symposium on 2000's Bryology was successfully held in Beijing, China on 26-30 August 1997. More than 100 participants from 16 countries attended the Symposium and two fieldtrips to Northeast China and Southwest China were organized after the meeting (Cao 1997). The first and second Chinese Symposia on Bryology were held in Beijing in August 1992 (Tan 1992) and in Jinan, Shandong Province in May 1995 respectively. In addition, two workshops on bryology were also organized in Shanghai in August 1993 (Tan 1993) and in Shenyang in August 1998 (Cao 1999).

BRYOLOGICAL BOOKS AND PAPERS PUBLISHED

There are six Chinese books dealing with bryophytes published in China during the 1990's. They included *Mosses of Heilongjiang Province and Mts. Daxinanling* (Aur & Gao 1992); *Handbook of Fildes Peninsula Antarctica Mosses* (Chen, F. -D. et al. 1995); *Flora Bryophyterum Sinicorum vol. 1, Sphagnales, Andreaeales, Archidiales, Dicranales and vol. 2 Fissidentales, Pottiiales* (Gao, C. 1994, 1996); *Flora Bryophytarium Intramongolicatum* (Bai, X. L. 1997); *Bryological Biology* (Wu, P. C. 1998); and *Flora Bryophytorum Shandongicorum* (Zhao & Cao 1998). Three English books on Chinese bryophytes were published for the first time in China, including *Mosses & Liverworts of Hong Kong vol. 1 and vol. 2* (So M. L. 1995, Zhu & So 1996); and *Moss Flora of China vol. 1* (Gao & Crosby 1999).

During the past ten years, five issues of *Chenia*, Contributions to the Cryptogamic Biology volumes 1-5 were published in Beijing. According to our collection of recent literature, more than 400 papers dealing with Chinese bryophytes have been published in different journals in China and abroad during the 1990's. Besides taxonomic and floristic studies, these scientific papers also covered different aspects of bryological researches such as ecology, cytology, biodiversity and its conservation, utilization of bryophytes and Antarctic bryophytes etc.

ADVANCES IN THE RESEARCHES ON CHINESE BRYOPHYTES

Based on the information and literature, some main advances in the research on Chinese bryophytes is summarized and outlined here. We thank many Chinese colleagues for providing lists of their published papers and some reprints. Owing to limited space some advances may have been omitted. Current Chinese Bryological Literature IV, in which a list of about 500 references dealing with Chinese bryophytes during the 1990's is presented, is in preparation and will be submitted for publication soon.

1) Taxonomic and floristic studies

In addition to an updated Checklist of Chinese mosses (Redfearn et al. 1996) and Catalogue of Chinese Hepaticae and Anthocerotae (Piippo 1990), some updated regional or provincial checklists were published recently. These lists reported some new bryophytes in China and related regions from Guizhou (Lin & Wu 1994, Xiong, Y. X. 1998), Hainan (Lin et al. 1994, Zhang, I. 1996), Henan (Tan et al. 1996), Hong Kong (Zhang & Lin 1997), Hunan (Rao et al. 1997), Jiangsu (Ling & Wang 1997), Jiangxi (Xie & Qiu 1992), Qinghai-Tibetan Plateau (Tan & Jia 1997), Sichuan (Piippo et al. 1997), Xinjiang (Tan et al. 1995; Whitteomor et al. 1998), Yunnan (Piippo et al. 1998) and Zhijiang (Zhu et al. 1998) etc. According to recent literatures on Chinese bryophytes, one new genus *Orthomitrium* (Lewinsky-Haapasaari & Crosby 1996) and about 37 new species and varieties (17 mosses and 20 liverworts) were described based on bryophytes collected from China. One moss family Schistostegaceae (Cao et al. 1999), eight genera of mosses, including *Brachydontum* (Gao, C. 1994), *Calliergidium* (Luo & Zhao 1991), *Coscinodon* (Cao et al. 1991), *Miehea* (Chiang, T. Y. 1997), *Phascum* (Bai & Wu 1997), *Physcomitrella* (Li & Wu 1995), *Schistostegia* (Cao et al. 1999), *Seligeria* (Gao C. 1994), and six genera of Hepaticae, including *Allobiellopsis*, *Hygrobiella*, *Pleuroclada* (Yi & Gao 1999), *Horikawaella* (Yi et al. 1998) and *Hattoria* (Yi & Gao 1998), *Otolejeunia* (Zhu & So 1997) as well as more than 75 species were newly added to the bryoflora of China.

The Chinese families and genera of bryophytes treated by taxonomic revision and monographs recently included the families Brachytheciaceae (Wang & Hu 1998), Calymperaceae (Reese & Lin 1991), Frullaniaceae (Chao & Lin 1991), Hookeriaceae (Lin & Tan 1995), Pleuroziaceae (Bai & Li 1998), Polytrichaceae (Hyvenon & Lai 1991), Pottiaceae (Li & Iwatsuki 1996), Sematophyllaceae (Tan & Jia 1999), Tetrarhiaceae (Li & Zhang 1997), Theliaceae (Gao & Cao 1992a) and Thuidiaceae (Wu, P. C. 1999) and genera *Andreaea* (Cao et al. 1995a, Chian T. Y. 1998), *Anoetangium* (Li & Iwatsuki 1997), *Campylopus* (Frahm 1992), *Cryphaea* (Rao & Enroth 1998), *Dicranum* (Gao & Cao 1992c), *Encalypta* (Cao et al. 1992), *Indusiella* (Cao et al. 1998a), *Jaffuliobryum* (Cao et al. 1998a), *Notoscyphus* (Gao et al. 1999), *Orthotrichum* (Lewinsky 1992), *Philonotis* (Koponen 1997), *Plagiochila* (Grolle & So 1997, 1998, 1999a,b,c,d, Piippo 1997 a, b, Zhu & So 1999), *Ptychomitrium* (Cao et al. 1995b), *Racomitrium* (Cao et al. 1998b), *Timmia* (Zhao & Han 1999), *Tomenhypnum* (Vitt et al. 1990) etc.

Tong Cao and Yuanming Zhang, are at the Institute of Applied Ecology, Academia Sinica, Shenyang 110015, China. Tong Cao is a councillor of IAB and a regional editor of BT

To be continued in next issue

BOOK REVIEWS

**Literature
Column**
ed. Johannes Enroth

Ley, L. M. & Crowe, J. M.: An enthusiast's guide to the liverworts and hornworts of Ontario. – 135 pp. Lakehead University Print Shop. Thunder Bay, Ontario 1999. ISBN 0-88663-027-4. Available from: Claude Garton Herbarium, Lakehead University, 955 Oliver Road, Thunder Bay, Ontario P7B 5E1.

This small book seems to be very practical in field work but is easily lost in a book-shelf among notebooks because of its notebook appearance. The appearance can, however, serve to lower the threshold for an amateur to take a look at the book and perhaps even at hepatics. As stated in the preface, the information about hepatics in a concise, accessible and affordable format to students, field biologists and amateur botanists was the most important aim of this publication.

The question arises: does this book fulfil the aim?

The book consists of various parts: Introduction; Map of forest regions of Ontario; Taxonomic arrangement; Glossary; Artificial key to species; Guide to relative size; Quick checks to leaves, gemmae and underleaves; Map of Ontario showing political boundaries; "Annotated checklist" of species; Recent synonyms; Excluded taxa, and references separately to literature cited and useful references. There is no index. The organization is somewhat messy, possibly useful items were scattered arbitrarily inside the covers, e.g. a map of forest regions of Ontario on p. 6 and a map of political boundaries on p. 49, without title.

The introduction gives information on morphology, history of collecting in Ontario, vegetation and climate in Ontario, and collecting and processing of hepatics. This part could have been divided under subtitles. The morphology separating the orders Marchantiales and Metzgeriales is too superficial. The plate with representations of bryophyte habits is fairly informative, but the quality could be better. The distinction of gametophyte and sporophyte generation is not given for hornworts, Metzgeriales ("thalloid liverwort, Hepaticae, Jungermanniales") or Marchantiales. Costa is missing in the figure for Metzgeriales, even though it is mentioned in the text.

Taxonomic arrangement gives 31 families, which are cited in species list. Unfortunately all of these numbers given in the species list are erroneous, probably because of the change of place of Anthocerotae after Hepaticae from its previous place in the manuscript. The glossary of descriptive terms is fairly good, but many more figures should have been included or species plates cited. What kind of a liverwort structure can be called cruciate, cross-shaped? Some figures are cited for a few different terms and the reader is left to find out which is which.

The key to every species (p. 18 – 41) seems practical, at least I managed to use it in a couple of cases. The key uses the terms succubous and incubous, but they are not used in the species descriptions, which does not make using the book any easier. I did not understand why some things are underlined in the key, nor did I find any explanation for this. The notes in the middle of the key explaining that a species can key out also in this place, are useful. The couplets do not always give the same characters for comparison.

Guide to relative size is the most unusable part of the book. All the Ontario hepatics are ranked from the smallest to largest separately under Marchantiales, Metzgeriales and Jungermanniales, the latter under groups "very small", "small", "medium" and "large", the last one forming a category described as "easy to see". Helps a lot identifying a hepatic! In the species list *Ricciocarpos* is "small" with the width of 4–8 mm, but it is about at the middle of the Marchantiales size grouping with the largest ones having a width of 7–12 mm. Quick check for leaf forms is good, much more useful than the quick check for gemmae, not to mention underleaves.

The "species list" gives descriptions, habitats and ranges in Ontario and in the world, of 184 hepatic and hornwort taxa (even though the text claims 170 + 13 literature reports). Table of contents calls the "species list" an "annotated checklist of species", which it is not. The species descriptions are short and often do not give enough information to separate difficult species from each other. Not many microscopic characters are given. In some cases that makes identification unsure and renders it necessary to consult further guidebooks. Some characters are not given for related species, e.g. on p. 53 for the pores of *Asterella* species. Oil bodies are usually not mentioned except when necessary, but not for example to distinguish the genera *Cephalozia* and *Cephaloziella*. Illustrations are simplified only to highlight some features of the taxa. The reproduction of the plates is poor in some plates and the lines have disappeared here and there. The book has a few colour plates, the information of which is hidden on p. VI. Their meaning seems to be only to refresh the reader. *Lophozia* is one of the genera difficult to identify on the basis of the book, not made easier because of the lack of figure numbers on p. 106. The species names under each plate does not have reference to figures, so the correct figure needs to be found from the species description. I tried to identify species from the illustrations of *Lophozia* (p. 106) with missing numbers, but the illustrations were so similar that my efforts were not successful. The different fonts used in the plates do not have any information value. I think it would have been more useful to group the plants according to relationships, in the present alphabetical order it is harder to compare similar plants.

However, I consider the book useful for a student and amateur botanist to start with. Many identifications will undoubtedly remain uncertain based on this book but then the additional literature given in the book is recommended. Another aim of the book, to record the hepatics of Ontario, is well justified: the field biologist knows what is to be expected in the large area of Ontario. That makes life much easier. Every university teacher giving bryophyte courses in his or her own country would be pleased to have a similar book for their students.

Sinikka Piippo

When I received Jean Paton's work "The liverwort flora of the British Isles" under my nose for a review, I realized the task was not an easy one. Usually books like this one lack finishing touches, are full of mistakes and bad or incomprehensible organization etc., but that was not the case with this book. I have discovered one spelling error! Perhaps scanning the whole book, which would take about one year, would reveal another one.

The book consists of Introduction; Class Marchantiopsida of Division Bryophyta; Glossary; Vice counties in the British Isles and Map; Bibliography, and Index. The introduction is remarkably thorough, telling about peculiarities of the liverworts; the methods of compiling the book; collection and preservation methods of liverworts; measurements used in the book for illustrations; examination of material and preparation of branches, stems, transverse sections, leaves, leaf insertion, leaf cells, underleaves, oil-bodies, gemmae and regenerants, galls, inflorescences, perianths, and sporophytes; habitats and distribution; conservation; function and use of keys; explanation of text giving information on taxonomy, citations of authors, synonyms, descriptions, dimensions of plants and their parts, habit, colour, aroma, plant size, branches, stem and costa, leaves, cuticle, papillae, oil-bodies, gemmae, regenerants and asexual reproduction, galls, fertile material, inflorescences, sporophytes, spores, elaters, ecology, associated plants, distribution in the British Isles, non-British taxa, and glossary – i.e., just about everything! Abbreviations and symbols used in the text and in the figures and explanation of figures are also given. The glossary has illustrations on leaf insertion and orientation; types of branches; shapes of leaves, underleaves and other plane structures; types of apex, margin, surface ornamentation and cell profile; spatial relationship of sexual organs diagrammatically, and shapes of perianths and solid structures. This provides an excellent format for all of us working with liverworts to follow.

The systematic section begins with a Conspectus of Classification followed by genera, with keys, and of species, and illustrations. Descriptions are giving the most important details to identify the plants. Unnecessary details are not included. Discussions are excellent and often longer than the descriptions, backed with useful information on the pertinent characters and how to distinguish

the plant from a related species. Ecology and distribution are dealt with in length. Even the generic discussions are marvelous. The book contains 296 species, ca. 70 % of the total number of species in the European liverwort flora, even more in areas with fewer thalloids. For Finland the book covers all but 38 species out of 219, half of the missing ones being thalloids and *Scapania* species.

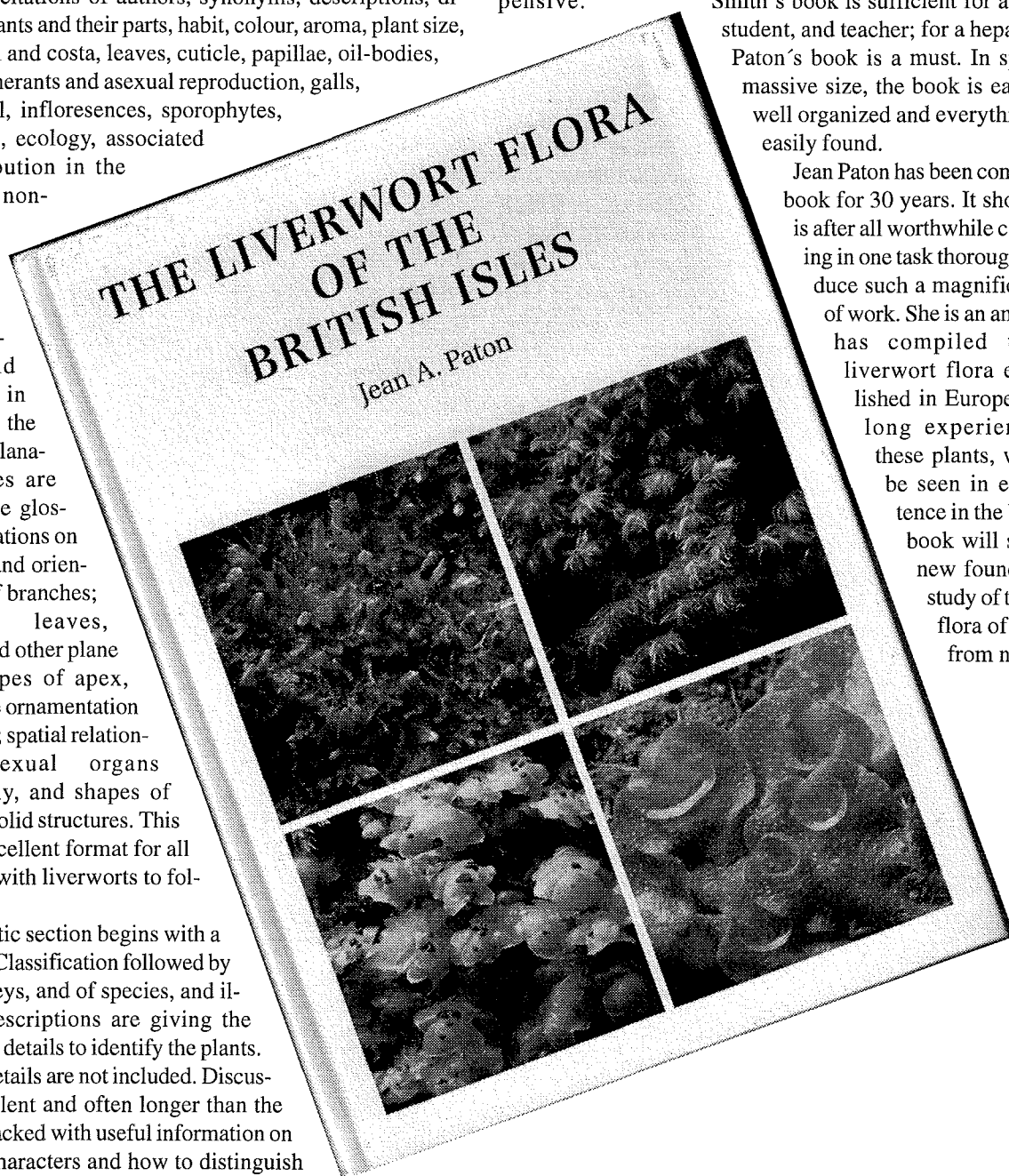
Paton's illustrations are very good because of their thoroughness: there is usually one whole plate (sometimes two) for every species. She has made the figures herself and has therefore been able to illustrate the most important characters for identification. Full range of variation is presented for the most important characters. That will enable others to determine these morphologically variable plants more easily than before.

Both A. J. E. Smith's book "The liverworts of Britain & Ireland" with its lower price (and easier to carry in the field) and the present Paton's flora are important contributions. The latter is more comprehensive, impossible to take to the field, and expensive.

Smith's book is sufficient for a beginner, student, and teacher; for a hepaticologist Paton's book is a must. In spite of its massive size, the book is easy to use, well organized and everything can be easily found.

Jean Paton has been compiling the book for 30 years. It shows that it is after all worthwhile concentrating in one task thoroughly to produce such a magnificent piece of work. She is an amateur and has compiled the best liverwort flora ever published in Europe. She has long experience with these plants, which can be seen in every sentence in the book. The book will serve as a new foundation for study of the hepatic flora of the world from now on.

Sinikka
Piippo



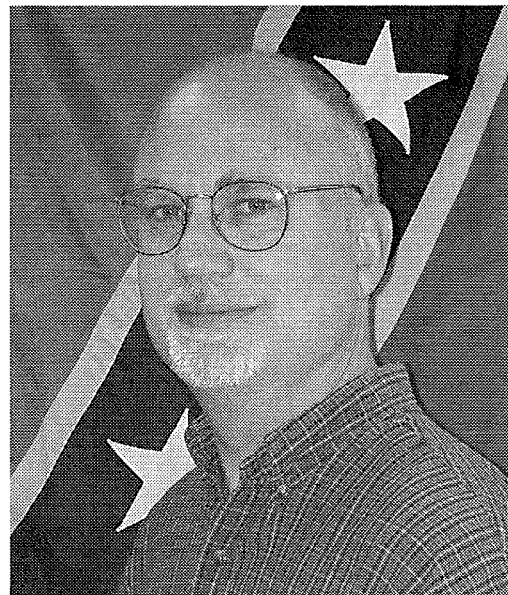
THESES IN 1 BRYOLOGY

ed. Bill Buck

As reported in the last issue of *The Bryological Times* (99: 17, 1999), the International Association of Bryologists has decided to begin a repository of bryological theses. These theses will be housed in the Library of The New York Botanical Garden. They will be available via interlibrary loan.

The NYBG Library online catalog (CATALPA) may be viewed at: <http://www.nybg.org/bsci/libr/Catalog.html>. As theses arrive, bibliographic data and a brief synopsis will be published in this column (see examples below). Bryological theses for any degree, covering any aspect of bryology in any language, will be included. Please send theses to Bill Buck at the address below. Please refer to the preliminary notice (cited above) for information on financial assistance from IAB for reproduction of theses.

William R. Buck, Institute of Systematic Botany, New York Botanical Garden, Bronx, NY 10458-5126, U.S.A.



Aziz, Mohd. Nehal. 1994. Taxonomic studies on family Pottiaceae (Musci) of India. Ph.D. thesis, University of Calcutta, Calcutta, India. [vii] 322 pp. + 132 figures (unpaginated) + 3 bound reprints (see below for details). In English. Current address of author [not certain]: Botanical Survey of India, Howrah-711103, India. E-mail unknown.

After a brief introduction to the history of the study of Pottiaceae in India, this doctoral thesis provides keys, descriptions, and illustrations to the 28 genera and 132 species represented in India. There are 38 names newly reduced to synonymy. Nine new combinations are proposed in *Didymodon*, *Oxystegus*, *Scopelophila* and *Weissia*. None has subsequently been validly published by the author, but one of them, *Didymodon hastatus*, has been published by Richard Zander. Three reprints are bound into the thesis, all authored by Aziz and his doctoral advisor, J. N. Vohra. They are: A new species of *Anoetangium* Schwaegr. (Musci) from India. *Bull. Bot. Surv. India* 25: 239-240. 1983 [1985]; A note on the identity of *Hymenostylium xanthocarpum* (Hook.) Brid. *Bull. Bot. Surv. India* 30: 185-187. 1988 [1990]; A new species of *Anoetangium* Schwaegr. (Musci) from India. *Bull. Bot. Surv. India* 30: 187-189. 1988 [1990].

Churchill, Steven P. 1988. A revision of the moss genus *Lepidopilum* (Callicostaceae). Ph.D. dissertation, Graduate Faculty in Biology, City University of New York, New York, U.S.A. xi + 293 pp. In English. Current address of author: Bryology Laboratory, Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166-0299, U.S.A. <schurchill@lehmann.mobot.org>.

The first 40 pages of this doctoral dissertation deal with the history of *Lepidopilum* and its relationships to other genera of the Hookeriales as well as a synopsis of the morphological characters useful in studying the genus. The bulk of the dissertation is a taxonomic treatment of the genus, providing a generic description, a key to the species, synonymy (including type citations), species descriptions and line drawings, distribution maps and specimen citations. Thirty species are recognized.

La Farge-England, Catherine. 1997. Systematic studies of the tropical genus *Leucoloma* Brid. (Dicranaceae, Bryopsida). Ph.D. thesis, Department of Botany, University of Alberta, Edmonton, Alberta, Canada. [xi] 396 pp. In English. Current address of author: Department of Biological Sciences, University of Alberta, Edmonton, AB T6G 1E9, Canada <clafarge@gpu.srv.ualberta.ca>.

This doctoral thesis is divided into three primary chapters. The first is a synopsis of *Leucoloma*, providing a history of the genus, the morphological characters useful in studying the genus, a key to the genera of Dicranaceae with limbate leaves, a key to the subgenera, sections, subsections and series of *Leucoloma*, and a key to the species of subgenus *Leucoloma* in Africa and Madagascar. Several new infrageneric names are proposed, as well as 3 new species, one new subspecies, one new variety, and one new combination. None has been subsequently validated. The second chapter deals with the infrageneric phylogeny, classification and phytogeography of *Leucoloma*. The third chapter is a slightly modified version of a paper published as: Growth form, branching pattern, and perichaetial position in mosses: cladocarp and pleurocarpy redefined. *Bryologist* 99: 170-186. 1996.

Løe, Geir Wickstrøm. 1999. Population studies of three rare hepatic species in the genus *Herbertus* S. F. Gray. Candidatus Scientiarum (Master's) thesis, Department of Botany, Norwegian University of Science and Technology, Trondheim, Norway. 16 + 56 + 6 pp. In English. Current address of author: Department of Botany, Uppsala University, Villavägen 14, 752 36 Uppsala, Sweden <geir.loe@vaxtbio.uu.se>.

This master's thesis is divided into three, independently paginated sections. The first is an overall synopsis of the work dealing with the population biology of three rare hepatics, *H. aduncus* ssp. *hutchinsiae*, *H. borealis* and *H. stramineus* in Norway, and their conservation. The other two parts are journal-ready manuscripts, "Studies of population structures in three rare hepatic species," and "Regeneration of *Herbertus* S. F. Gray fragments in the laboratory."

Conservation Column

ed. Tomas Hallingbäck



A NEW PUBLICATION ON BRYOPHYTE CONSERVATION

Hallingbäck, T. and Hodgetts, N. (compilers). 2000. *Mosses, Liverworts, and Hornworts. Status Survey and Conservation Action Plan for Bryophytes*. IUCN/SSC Bryophyte Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK.

IUCN and IAB bryophyte conservation groups have co-operated in a joint project to produce a Global Action Plan for Bryophyte Conservation. This has now come to fruition, and is to be published shortly by IUCN (World Conservation Union).

The book focuses mainly on the importance of bryophytes, and the threats to them, describes specific key habitats, and includes regional overviews of Australasia, Asia, Africa, South and North America and Europe. It also discusses the biology of bryophytes in connection with nature conservation, and the distribution of threatened species. The publication includes 22 photos, 6 maps and 6 drawings.

This Action Plan is aimed at all those who work in the field of, or have an interest in, nature conservation and wish to take steps to conserve bryophytes. It is also aimed at governmental and non-governmental organisations, politicians, and the public.

PERSONALIA

Rob Gradstein was appointed an ordinary member of the Academy of Sciences, Göttingen. During February-August 2000 he will spend his sabbatical at the Botanical Garden of Rio de Janeiro where he hopes to finish his synoptic Hepatic Flora of Brazil, a work that has been in the making for several years and that is being co-authored by Denise Pinheiro da Costa (Rio de Janeiro). The Flora provides keys to the ca. 900 liverwort species reported for Brazil together with notes on their ecology and distribution, as well as full descriptions and illustrations of the ca. 150 genera and families. There is no single modern liverwort flora for any part of the Neotropics, therefore the book might help to fill a major gap in the literature. About two-third of the hepatics of tropical America, currently estimated at 1350 species (Gradstein et al. in press), are keyed out in this work. The Flora of Brazil project is supported by grants from the Brazilian Government, the Margaret Mee Foundation and the Volkswagenstiftung.

Rob's address in Brazil will be: c/o Dr. Denise Pinheiro da Costa, Jardim Botânico, Rua Pacheco Leão 915, CEP 22460-030, Rio de Janeiro, Brasil, e-mail: denise.costa@jbrj.gov.br

Reference: S.R. Gradstein, S.P. Churchill & N. Salazar Allen (in press). A Guide to the Bryophytes of Tropical America. Memoirs of the New York Botanical Garden 86: ca. 600 pp.

Terry Hedderson has moved from Reading to take up a tenure-track appointment to the Botany Department. He will be setting up a research program in molecular systematics at the University of Cape Town. This will complement existing strengths in the Botany department. He will continue his work on bryophyte systematics and biogeography, using both molecular and non-molecular data sources and will also initiate a programme of research into the ecology of fynbos bryophyte

His new address is Botany Department, University of Cape Town, Private Bag, 7701 Rondebosch, South Africa. FAX +27 021 650 4041. Email: thedders@botzoo.uct.ac.za

A number of broad initiatives are suggested:

- Inventories in the tropics to determine bryophyte richness in different regions and habitat types, and which species are threatened.
- Establishing protected areas or national systems of protected areas.
- Comparing bryophyte floras of undisturbed and disturbed habitats, to determine the impact of disturbance, and to identify those species unable to survive in disturbed areas.
- Studying the taxonomy and distribution of individual species, to determine how species can be identified, to determine their ranges, and to help identify those that are narrowly endemic.

Training locals to become taxonomists. Because of the speed at which natural environments are disappearing world-wide, this initiative is extremely urgent and should be implemented immediately.

Examples of priority projects for bryophyte conservation and a list of the most endangered bryophyte species throughout the world can be found in the appendices of this Action Plan. The list of most endangered species called "the 1999 World Red List of Bryophytes" is also available at the Internet site: <www.dha.slu.se/guest/WorldBryo.htm>.

The book can soon be ordered from: IUCN Publications Services Unit, 219c Huntingdon Road, Cambridge CB3 0DL, United Kingdom, Tel: +44 1223 277894, Fax: +44 1223 277175, E-mail: info@books.iucn.org, <http://www.iucn.org>

T. Hallingbäck

WORKSHOP

BRYOPHYTE RED LISTS FOR EUROPE

LUSO, PORTUGAL 22-24 SEPTEMBER 2000.

Many national and regional Red Lists of bryophytes have been published during the last 10 years, including one for whole Europe and Macaronesia (ECCB 1995). These lists have used different criteria and emphasized different reasons for rarity. This workshop will discuss the criteria to use, and what to emphasize in bryophytes when extinction risks are evaluated. New data on endangered and vulnerable species of Europe and Macaronesia will be presented and discussed.

Place: Luso near Buçaco, 200 km N of Lisboa and 25 km N of Coimbra.

Time: 22-24 September 2000.

Program: Two days of discussions and one day of excursion. The workshop will be focused on discussions around the issues of what information we should use to evaluate extinction risks. There will be only limited time for presentations in order to get more time over for group and plenary discussions around the topics.

Preliminary registration should be sent to Cecília Sérgio, Museu Laboratório Botânico, Faculdade de Ciências, 1250-102 Lisboa, Portugal csergio@fc.ul.pt, not later than 1st of April 2000.

EXCURSION THE FIFTH ANNUAL SPRING OUTING BOTANICAL EXCURSION FORAY, RETREAT AND ESCAPE TO THE ENVIRONMENT!

**** SO BE FREE 5 ****

March 24, 25, and 26, 2000 at Las Vegas, Nevada, and vicinity

Founded in 1996, SO BE FREE is a series of West Coast forays started by the Bryolab at UC Berkeley, but open to all botanists. The main focus is on bryophytes, but we also encourage experts on macroalgae, mushrooms, lichens, ferns, and flowering plants to come along. We welcome specialists in bryophytes, as well as generalists, or amateurs who are interested in an overview. It is held each spring, associated with Spring Break at universities. This distinguishes it from the eastern bryological forays (the Andrews and the Blomquist Forays) which are held in the fall. This allows the occasional easterner, desperate for the chance to see plants and blue sky in the spring, a chance to attend.

The usual tradition is to have a four-day, three-night schedule with communal cooking and eating, in inexpensive and remote biological field stations. Evening slide shows and informal talks are presented as well as keying sessions with microscopes. In addition to seeing interesting wild areas and learning new plants, important goals for SO BE FREE include keeping west coast bryologists (and friends) in touch with each other and teaching beginners.

For a glimpse of the past outings, see the SO BE FREE web site: <http://ucjeps.herb.berkeley.edu/bryolab/trips/sobefree.html>

LOCATION THIS YEAR: The Mojave Desert is the driest region in North America, characterized by sparse vegetative cover, climatic extremes, long periods without precipitation, high evapotranspiration, and wide diurnal and seasonal variation in surface temperatures. Rising from the desert floor at 2000 ft are the Spring Mountains of southern Nevada, which reach nearly 12,000 ft in elevation. These mountains are of interest for the many endemic plants and animals found nowhere else in the world.

The city of Las Vegas, renowned for its gaming attractions, is surrounded by a variety of parks, rugged mountains ranges, and unique habitats. These include large sandstone formations, a series of gypsum formations, high elevation limestone cliffs, and one of the largest lakes in the world.

This foray will depart from the normal pattern of wilderness retreats in the SO BE FREE tradition, with the group staying this year in a hotel south of downtown Las Vegas. This arrangement will allow us to visit a greater diversity of habitats in the southern Nevada region.

The Saturday foray will be to a high elevation limestone area in the Spring Mountains, at approximately 8,000 feet. The north-east slopes of the mountains offer an incredible transect of vegetation types ranging from creosote bush scrub through pinyon-juniper woodland, ponderosa pine forest, and into a subalpine forest, with large limestone boulders, cliffs, and running streams with aquatic mosses. The Sunday foray will focus on the sandstone formations in the southern region of the Spring Mountains, within the Red Rock National Recreation Area. These narrow canyons are home to several disjunct populations of bryophytes, and the scenery is superb. For those interested on Monday, we will spend the morning venturing to a unique series of gypsum

formations, on which the endemic Las Vegas poppy grows along with the rare *Didymodon nevadensis*. This area is north of Lake Mead, within the Lake Mead National Recreation Area.

The group will register at the Silverton Hotel Friday and gather for drinks and dinner at the hotel. On Saturday night you are invited to the residence of Lloyd Stark, for a backyard barbeque overlooking the bright lights of Las Vegas. Sunday evening we will convene on campus at the University of Nevada Dept of Biological Sciences for a microscope session and an informal mixer.

LODGING: A block of rooms has been reserved at the Silverton Hotel, under the group name So Be Free, for March 24-26. Rates are Fri-\$60, Sat-\$60, Sun-\$29 (an average of \$50 per night). These rates are for two individuals per room. For an additional \$5 per person, up to 4 individuals can room together to save costs. Call the Silverton at 800-588-7711 (or 702-263-7777) to place a deposit on the first night rent. **Rooms should be reserved no later than February 24, 2000, otherwise rates and availability are subject to change.**

Attractions at the Silverton Hotel include buffets, shows, gaming, i.e., the usual fare of Las Vegas. So feel free to arrive early or stay later and enjoy the unique atmosphere of the fastest growing city in America (but bring lots of extra money or extra willpower!).

RESERVATIONS: Please inform Lloyd Stark of your intent to attend the foray, by February 24th, 2000, at: LRS@nevada.edu, or by telephone 702-895-3119

CONTACT INFORMATION: Lloyd R. Stark email lrs@nevada.edu, Department of Biological Sciences, tele (702) 895-3119, Box 454004, FAX (702) 895-3956, University of Nevada, Las Vegas, NV 89154-4004, USA

CITATION OF THE EUROPEAN RED DATA BOOK

The European Red Data Book is often cited in bryological literature as Schumacker & Martiny (1995). This citation is based on the pre-edition that was circulated before the publication. In order to get a consistent citation, the recommendation on the inside of the cover should be followed, i.e the citation should be as follows:

European Committee for Conservation of Bryophytes (ECCB) 1995. Red Data Book of European Bryophytes. ECCB, Trondheim

Also the Swiss Red Data List is often erroneously cited as Urmi as the only author. Further on, the correct printing year is not stated in the publication. The correct citation should be:

Urmi E, Bisang I, Geissler P, Hürlimann H, Lienhard L, Müller N, Schmid-Grob I, Schnyder N, Thöni L. 1992. Die gefährdeten und seltenen Moose der Schweiz – Rote Liste. BUWAL, Bern.

P. Geissler & L. Söderström

RECENT DEATHS

Margaret H. Fulford (1904-1999)

Margaret Hannah Fulford, grand old lady of North American hepaticology, died in Cincinnati on the 30th of November 1999, aged 95. Professor Fulford was a graduate of Yale University and taught botany at the University of Cincinnati for almost half a century, from 1927 until retirement in 1974. She was a student of the famous hepaticologist and lichenologist Alexander W. Evans and made lasting contributions to the morphology, ontogeny and systematics of hepatics, especially relating to the species of Latin America.

Her most important research publications are "*The young stages of the leafy Hepaticae*" (1956), a synthesis of the patterns of development of sporelings, gemmalings and regenerants in the leafy hepatics and based on twenty years of original research, and the "*Manual of the leafy Hepaticae of Latin America*" (1963-1974). In addition, she wrote several authoritative reviews on the evolution and phylogeny of the liverworts, including "*Recent Interpretations of the Relationships of the Hepaticae*" (1948) and "*Evolutionary trends and convergence in the Hepaticae*" (1965). Her essay "*Continental Drift and distribution patterns in the leafy Hepaticae*" (1963) was a first attempt to apply the new insights of plate tectonics to phytogeography. With her last publication on the leafy Hepaticae of Mexico (1990) - co-authored by one of her best friends, the late Aaron J. Sharp - Margaret Fulford summarized the results of forty years of joint work on the hepatics of that country.

The *Manual of the leafy Hepaticae of Latin America*, although incomplete, is the definite tool for the identification of the leafy liverworts of South America. It treats the species of important families such as Lepidoziaceae, Cephaloziaceae, Calypogoniaceae and Geocalycaceae and many "primitive" ones, and provides or-

der in the nomenclatural chaos left by authors such as Stephani and others. The amount of labor involved has been immense - Margaret Fulford built one of the most comprehensive libraries and cardfiles on hepatics in the Western Hemisphere and her personal herbarium counted over one hundred thousand specimens.

Besides her important contributions to bryology, Margaret Fulford is fondly remembered as a great teacher. She was very open-minded and always interested to hear one's opinion. She really cared for her students and made sure they got the best possible background in hepaticology. Her laboratory has been one of the most important "breeding centres" for hepaticology in this century - her PhD students included (in chronological order) the late Ray Hatcher, Jane Taylor, the late Ray Hollensen, Wonshic Hong, Larry Swails, Ray Stotler, Barbara Crandall-Stotler and Rob Gradstein. Those who had the privilege to work with her, will never forget her inspiration and great spirit.

S. Rob Gradstein, University of Göttingen, Germany

Eric V. Watson (1914-1999)

It is with deep sorrow that we inform you that Dr Eric Vernon Watson passed away on Monday 25th October 1999. He had been suffering for some months with leukemia.

Eric Watson was a lecturer and then senior lecturer here at the University of Reading, U.K. from 1946 until his retirement in 1979. However, he continued to be very active bryologically almost until his death at 85. He continued to run forays from his home for all interested until last year.

H.L.K. Whitehouse (1917-2000)

H.L.K. (Harold) Whitehouse passed away on the 18th January 2000. He was a geneticist at the Botany School in the University of Cambridge. Within bryology he was a pioneer in the investigation of mosses with rhizoidal tubers, and he developed techniques for growing them in axenic cultures.

EXCURSION

BRITISH BRYOLOGICAL SOCIETY SPRING FIELD MEETING 2000

BUDE, NORTH CORNWALL, UK. 12-19 APRIL 2000



Local secretaries: Mrs Jean Paton, Fair Rising, Wagg Lane, Probus, TRURO, Cornwall TR2 4JU; tel: (+44) 01726 882 164 (for accommodation and transport); Dr David Holyoak, 8 Edward Street, Tuckingmill, CAMBORNE, Cornwall TR14 8PA; tel: (+44) 01209 716 042 (for field excursions).

Headquarters: Burn Court Hotel (2-star standard) 12 Burn View Road, BUDE EX23 8DB; tel. and fax: 01288 352 872. Tariff: dinner, bed and breakfast £20 per day. This is a special price for members of the B.B.S. and if we can nearly fill the hotel we shall have the accommodation to ourselves. When reserving a bedroom, members should make sure that they mention the British Bryological Society, and please send a £20 deposit. There will be an informal meeting in the bar-lounge at the H.Q. at about 9 p.m. on Wed. April 12, and excursions on each of the following six days. See also Bulletin No. 73: 19-20, 1999. When reservations have been made, participants should inform Jean Paton where they will be staying, for how many nights and whether they will have a car; this is important because parking space outside the hotel is rather limited and alternative arrangements will have to be made for some cars. Jean will then send a programme and

additional information. A provisional programme of excursions more or less in the following order, includes the coast at St Gennys and east of Tintagel, Rough Tor on Bodmin Moor, the coast near Morwenstow and north of Boscastle, and a wooded valley near Boscastle.

Little bryological work has been carried out in North Cornwall since the 1960s and it has not been visited previously by the BBS. There are many interesting coastal sites, valley woodlands nearby, and Rough Tor on Bodmin Moor. Bryophytes recorded in the area include *Acaulon muticum*, *Bryum donnianum*, *Campylopus pilifer*, *Coscinodon cribrosus*, *Douinia ovata*, *Fossombronia angulosa*, *F. husnotii*, *Fissidens celticus*, *Microbryum davallianum*, *Polytrichum alpinum*, *Tortula viridifolia* and *Weissia perssonii*.

Further information about Bude can be found at <http://www.bude.co.uk>

For information on future BBS meetings please contact Dan Wrench, BBS Meetings Secretary, at dan_wrench@yahoo.com or 12 Railway Terrace, Birkdale, Southport, PR8 1JL, UK

BBS web site: <http://www.rbge.org.uk/bbs/bbs.htm>

The Bryological Times is a newsletter published for the *International Association of Bryologists*. Items for publication are to be sent to the Editors or Regional Editors, **except** for those for the regular columns, which may go **direct** to the column editors

Editors

Lars Söderström, Dept of Botany, Norw. Univ. Sci. & Techn., N-7491 Trondheim, Norway. FAX +47 73596100. Email: Lars.Soderstrom@chembio.ntnu.no

Henrik Weibull, Dept Ecol. & Environ. Sci., Swedish Agric. Univ., Box 7072, S-75007 Uppsala, Sweden. FAX +46 18673430. Email: Henrik.Weibull@emc.slu.se

Terry Hedderson, Botany Dept, Univ. Cape Town, Private Bag, 7701 Rondebosch, South Africa. FAX +27 021 650 4041. Email: thedders@botzoo.uct.ac.za

Regional Editors

N. America: René J. Belland, Devonian Bot. Gdn, Univ of Alberta, Edmonton, AB T6G 2E1, Canada. e-mail: rbelland@gpu.srv.ualberta.ca

Latin America: Inés Sastre-De Jestis, Dept of Biol, Univ of Puerto Rico, P.O. Box 5000 Mayagüez, Puerto Rico 00681-5000. Email: lsastre@rumac.upr.clu.edu

C & E Asia: Cao Tong, Inst of Appl Ecol, Chinese Acad of Sci, P.O. Box 417, 110015 Shenyang, Liaoning, P.R. China. Fax: +86 2423 843313. Email: IFP@iae.syb.ac.cn

SE Asia: Ben Tan, Dept of Bot, School of Biol Sci, National Univ of Singapore, Singapore 119260. Email: dbsbt@nus.edu.sg

Australia and Oceania: Ray Tangney, Dept of Bot, Univ of Otago, PO Box 56, Dunedin, New Zealand. Fax: +64 3 479 7583. Email: ray@phyton.otago.ac.nz

Column Editors

Conservation column: Tomas Hallingbäck, Threatened Species Unit, Swedish Agric Univ, P.O. Box 7007, S-75007 Uppsala, Sweden. Fax: +46 18 673480. Email: tomas.hallingback@dha.slu.se

Literature column: Johannes Enroth, Dept Ecol & Syst, P. O. Box 7, FIN-0014 Univ of Helsinki, Finland. Fax: +358 9 191 8656. Email: enroth@kmu.s.helsinki.fi

Student profiles: Jennifer Doubt, Dept Biol Sci, Univ of Alberta, Edmonton, AB T6G 2E9, Canada. Email: jdoubt@gpu.ualberta.ca

Theses in Bryology: William R. Buck, Inst of Syst Bot, NY Bot Gdn, Bronx, NY 10458-5126, U.S.A. E-mail: bbuck@nybg.org

Tropical Bryology Column: Tamás Pócs, Eszterházy Teachers' College, Dept of Bot, Eger, Pf. 43, H-3301 Hungary, e-mail: colura@gemini.ektf.hu

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Diary

The diary are open for all bryological events. Please send information, preferably by email, to the editor. From this issue we intend to separate between courses and meetings.

Courses

2000

June 25 - July 1. Mosses, Liverworts, and Sphagnum Mosses; instructor, Norton G. Miller, Principal Scientist, New York State Museum. Further information may be had from: Humboldt Field Research Institute, P.O. Box 9, Dyer Bay Road, Steuben, ME 04680-0009 U.S.A. telephone: (207) 546-2821; (207) 546-3042 (FAX), <http://maine.maine.edu/~eaghlhill>.

September 10-16. Advanced Bryology; instructor, Norton G. Miller, Principal Scientist, New York State Museum. Further information may be had from: Humboldt Field Research Institute, P.O. Box 9, Dyer Bay Road, Steuben, ME 04680-0009 U.S.A. telephone: (207) 546-2821; (207) 546-3042 (FAX), <http://maine.maine.edu/~eaghlhill>.

Meetings

2000

March 24-26. SO BE FREE 5 at Las Vegas, Nevada, and vicinity. See elsewhere in this issue.

April 12-19. British Bryological Societies Spring Field Meeting to Bude, North Cornwall, UK. Local secretaries: Mrs Jean Paton, Fair Rising, Wagg Lane, Probus, TRURO, Cornwall TR2 4JU; tel: (+44) 01726 882 164 (for accommodation and transport); Dr David Holyoak, 8 Edward Street, Tuckingmill, CAMBORNE, Cornwall TR14 8PA; tel: (+44) 01209 716 042 (for field excursions). See also elsewhere in this issue.

April 28-30. SVBL. Annual meeting, excursions, paper reading: Romanshorn (Lake of Constance). Information: Silvia Stofer, WSL, CH-8903 Birmensdorf. (silvia.stofer@wsl.ch).

July 10-16. NBS excursiopl and annual meeting, Faroe Islands. Contact person: Kell Damsholt, Hagens alle 24, DK-2900 Hellerup, Denmark, kelld@bot.ku.dk

August 16-20. SVBL/BLAM Summer excursion, annual assembly of BLAM: Finhaut VS (Mont Blanc massif). Information: Patricia Geissler, Conservatoire botanique, CP 60, CH-1292 Chambésy (patricia.geissler@cjb.ville-ge.ch).

August 31-September 3. Field work for the Swiss bryophyte mapping project. Chur (Grison). Information: E. Urmi, Inst. Syst. Botanik, Zollikerstr. 107, CH-8008 Zürich (urmi@systbot.unizh.ch).

September 22-24. ECCB Workshop on "Bryophyte Red Lists for Europ" in Luso, Portugal. Preliminary registration should be sent to Cecília Sérgio, Museu Laboratório Botânico, Faculdade de Ciências, 1250-102 Lisboa, Portugal cs Sergio@fc.ul.pt, not later than 1 April 2000.

2002

January. IAB Meeting in Lucknow, India. Details will be announced in a coming issue of the Bryological Timmes.