

The BRYOLOGICAL TIMES

Newsletter of the International Association of Bryologists

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No. 30

THE IAB: MY THOUGHTS ABOUT IT

By Hiroshi Inoue

SINCE I WAS APPOINTED the third President of IAB at Sydney in 1981, my term of office has passed half way. During this period we had a very exciting and successful meeting of IAB in Tokyo when some 150 bryologists from nearly the whole world assembled for the World Conference of Bryology. First of all, I would like to thank all participants (and other friends who unfortunately could not travel to this Far East country) for making this conference so memorable, as has already been reported by several authors in the *Bryological Times*. Since the Tokyo meeting, the IAB seems to have started a new stage of further development, especially because of the recommendations that our constitution be amended into a more up-to-date and appropriate form by the efforts of the special committee for the Constitution (chaired by Dr. G. Mogensen). Thus I think now may be a good time to write about past and present affairs of the IAB and to express my hopes for the future of the Association.

In August 1966, at the time of the 11th Pacific Science Congress, in a small room of the National Science Museum, Tokyo, there assembled some 15 bryologists and lichenologists (including Dr. W.C. Steere, Dr. S.W. Greene and others) to discuss the possibility of establishing "An International Association of Bryologists and Lichenologists". This informal discussion resulted in the establishment of an organizing committee to promote the ideas expressed at the meeting and bore fruit at the Xth International Botanical Congress in Seattle in 1969 with the formal creation of our present association as "The International Association of Bryologists". The objective of the Association is "to promote international co-operation and communication among bryologists, whether amateur or professional".

For the 15 years since its

establishment, the Association has served appreciably as a bridge for friendship and co-operation between bryologists of different nations, different cultures and different governments. This is a rather remarkable achievement and we are very much thankful to the first President, Dr. W.C. Steere, and his successor, Dr. L.E. Anderson, and to all who have served as Executive and Council Members, for their enormous efforts in guiding the Association in the way it should go.

We have had several international meetings at the times of the International Botanical Congresses, or independently. Since the Boulder meeting in 1973, almost every two years we have had an IAB meeting, e.g. in 1975 at Leningrad, in 1979 at Geneva, in 1981 at Sydney, and in 1983 at Tokyo; furthermore in this year, 1985, we are going to have a special meeting on bryocology in Hungary, and in 1987 we will have the formal meeting (including a business meeting) at Berlin at the time of the XIIIth International Botanical Congress. Recently the Council of the IAB decided to hold a special IAB meeting on tropical bryology at St. Louis, Missouri, probably in 1989. Each meeting has produced very interesting proceedings with constructive and attractive papers, all of an extremely high standard and quality, that certainly provide a very good source of information about bryology, especially for other botanists.

One of the points which we should keep in mind is that world meetings covering broad aspects of bryology will stimulate our scientific interests and really promote mutual understanding among bryologists. For instance, the combination of taxonomy and chemistry is now producing plenty of information about the phylogeny of bryophytes and is opening up the possibility of bryophytes being of some economical importance.

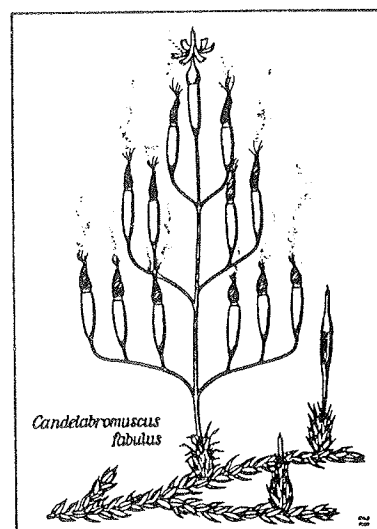
Such a combination of research has happened naturally by mutual interest from each side. Thus I think it would be worthwhile, as stated in Resolution 1* from the Tokyo meeting in 1983, that the IAB should plan to have an international meeting at least once in two years, focussing on a certain special topic or field of bryology.

By our constitution we have special committees to promote our projects. For instance, now we have a special committee for the multi-lingual bryological glossary (chaired by Dr. R. E. Magill) which was established

[contd. over]

*(see *Bryol. Times*, 21:4. Ed.)

THE EDITOR wishes to thank all who contributed to the success of the *Bryological Times* during 1984, and to wish them, and all the readership a happy and prosperous New Year. He would also like to thank those who sent him Season's Greetings and, by kind permission of its "discoverer", share his enjoyment with the most fantastical card he received:



"Happy Christmoss!"

[contd. from page 1.]

after the 1979 Geneva meeting to make a standard guide for bryological terminology. This committee made a first draft in English by April 1984, and now it is being distributed among committee members for review and translation into the other major languages. A committee for tropical bryology (chaired by Dr. M.C. Delgadillo) is seeking ways to stimulate bryological research in tropical countries and a committee for the *Bryologia Africana* project is being established (see this issue, p. 4). In addition to these committees, we have the special project to establish the *Advances in Bryology* as a major review journal. We are very thankful to Dr. W. Schultze-Motel who completed this hard job for the first 2 volumes, which were appreciated not only by bryologists, but also by many botanists whose primary interests are not in bryology. Volume 3 is actively being prepared by Dr. N.G. Miller as editor in chief (see this issue, p. 8).

The most important regular publication of the IAB is the *Bryological Times*. For this, Dr. S. W. Greene has devoted great energy since No. 1 was published in January 1980. Via the *Bryological Times* we can make our communications and activities widely known, and can publicise items of bryological news very promptly. It may be a surprise to many to hear that about 750 copies of each issue

are now distributed all over the world. More and more bryologists from many countries are co-operating by sending contributions and helping to distribute the *Bryological Times*. We greatly appreciate Dr. Greene's ideas and efforts to keep this a high-quality publication.

I have talked to, and corresponded with, bryologists from many diverse countries with different cultures to get their ideas and hopes about the future of IAB. I have been very pleased to find that they are all equally satisfied with the IAB affairs. However, I would like to point out that the IAB is not an association of any political viewpoint, nor of a grant-giving body, but is a true assemblage of independent scientists who have interests in bryophytes. This means all of the members - indeed all bryologists - have the power to breed our IAB up into a giant "tree" with diverse "branches" and "leaves", instead of leaving the association as a small, Pottiaceous moss plant. I hope that the IAB will continue to develop and be a stable bridge for international co-operation among bryologists.

Finally, I wish 1985 to be a Happy New Year for all bryologists.

Division of Cryptogams, National Science Museum, Ueno Park, Diotoku, Tokyo, Japan.

Membership of IAB

THE FOLLOWING LISTS, for the period 1 September - 31 October, 1984, up-date those already published. The last list appeared in *Bryol. Times* 29:3.

New Members

Jermy, A.C.*; Sastre-De Jesus, Ines*; Sharma, P.C.*

Addresses

Jermy, A.C. British Museum (Natural History), Cromwell Road, London SW7 5BD, England, U.K.
Sastre-De Jesus, Ines. New York Botanical Garden, Bronx, New York 10458, U.S.A.
Sharma, P.C. Department of Botany, Rajasthan University, Jaipur, 302004, India.

Change of Address

Arrocha, Clothilde. C/o M. I. Morales, Escuela de Biología, Ciudad Universitaria "Rodrigo Facio", Universidad de Costa Rica, San José, Costa Rica, America Central.

Iwatsuki, Z. Department of Botany, Hiroshima University, Naka-ku, Higashi-senda-machi, Hiroshima 730, Japan.

Mishler, Brent D. Department of Botany, Duke University, Durham, NC 27706, U.S.A.

Wiencke, Christian. University College of North Wales, Marine Science Laboratories, Menai Bridge, Anglesey LL59 5EH, Wales, U.K.

Zielman, Rudi. Maatweg 59, 6871, DM Renkum, The Netherlands.

Note* Addresses are only given for those members with an * after their surname or family name, i.e. for those whose names will not be found in S. R. Gradstein's *Directory of Bryologists and Bryological research*, Ed. 2 (Regnum Vegetabile, Vol. 99, 1979), or where their present address is different to that given in the *Directory*.

BRYOPHYTE NOMENCLATURE

IAPT Committee for

Bryophyta Nomenclature

THE APPOINTMENTS are announced of Drs. Gea Zijlstra (Utrecht) as member and secretary of the Committee for Bryophyta and of Dr. H. Bischler (Paris) as member of the Committee. The address of our new Secretary is:

Drs. Gea Zijlstra, Instituut voor Systematische Plantkunde, Rijksuniversiteit, Postbus 80. 102, 3508 TC Utrecht, Netherlands.

I hope for active and lively co-operation of all members for the task of our Committee.

R. Grolle, Chairman of the Committee for Bryophyta, Jena, 1984-09-02.

PROPOSALS PUBLISHED IN TAXON

AT THE SUGGESTION of several colleagues, and with the approval of Dr. Dan T. Nicolson, Nomenclatural Editor of *TAXON*, it is intended to start a column in *The Bryological Times*, to provide information on proposals regarding the conservation or rejection of names of bryophytes.

All proposals are published in *TAXON* and the main purpose of the new column is to call attention to these proposals, so that all bryologists, especially those who do not see *TAXON*, are aware of what is going on. More specifically, this column might help to prevent the synchronous submission of overlapping proposals and avoid publication of new combinations which would be shown soon afterwards, through conservation of the generic names, to be unnecessary.

The column editor will be Gea Zijlstra, the new Secretary of the IAPT Committee for the Nomenclature of bryophytes which considers these proposals. As it is the intention that information will be published in these columns only after it has appeared in *TAXON*, bryologists preparing nomenclature proposals should send their data for publication in *TAXON* in the usual way. Drs. Zijlstra will prepare the entries for this column.

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

OUT AND ABOUT

In South-Asia By B.C. Tan

THERE ARE ONLY A HANDFUL of bryologists residing in south-east Asia, that part of the world including southern China and Taiwan where the floras are much related. Because of the geographical and political isolation of the various countries in the historical past, regional collaboration has not been active, and even professional contacts have been few. The situation seems to be improving little by little since the last international bryological congress was held in Tokyo, Japan, in May 1983. During the Congress, the regional bryologists met each other for the first time to discuss their common bryological problems outside of the hectic schedule of the Congress.

This year saw several of them going abroad to conduct taxonomic researches in herbaria in North American and Japan:

Dr. M.A.H. MOHAMED, of the University of Malaya, has just concluded his one year sabbatical leave from the University and returned to Kuala Lumpur in September 1984. He visited New York Botanical Garden, the University of Southwestern Louisiana and the Missouri Botanical Garden. Recently Dr. Mohamed completed a revision of Malayan *Calymperes* and *Syrrhopodon* and will publish soon the results of his revision, with Dr. W. Reese as co-author.

Dr. LIN SHAN-HSIUNG of the Tunghai University in Taiwan continues his monograph study of the family Phyllogoniaceae and has published his latest results in a new botanical journal named *Yushania*, of which he is the editor. Because of the effort and contacts made by Dr. Lin, *Yushania* has already come out with two issues with several important articles dealing with the taxonomy of Asiatic bryophytes.

Dr. B.C. TAN of the University of the Philippines at Los Baños recently received a small research grant from the Dee Fund Foundation, based at the Field Museum of Natural History in Chicago, which will enable him to go to the Field Museum for a short research visit. Dr. Tan will be in the Chicago area from March 1 to May 31, 1985. He will study the Philippine specimens of bryophytes kept at the Field Museum herbarium under the curatorship of Dr. J. Engel.

Madame LIN PANG-JUAN of the South China Botanical Institute,

based in Guangzhou City (Canton) is now studying the Chinese *Fruillania* flora at the famed Hattori Botanical Laboratory in Japan for a period of 6 months, starting October 1984.

Prof. LI TZI-HWA of the Zhongshan (formerly Sun Yet-Sen) University in Guangzhou City has finally completed his two years of research at the Botanical Herbarium of the University of Helsinki, Finland. He made a revision of the Chinese *Fissidens* flora under the guidance of Dr. T. Koponen of the University of Helsinki. He returned to his University in July, 1984.

University of the Philippines at Los Baños College, Laguna 3720, The Philippines.

SOCIETY NEWS

BRYOLOGICAL SOCIETY OF JAPAN

A PLAN FOR A SERIES OF "Study meetings on bryology" was recently made, as one of the series of seminars in Natural History at the Natural Science Museum, Tokyo, in order to contribute to the further development of the various fields of bryology and to cultivate a better understanding of the present diversifications of the subject. Study meetings will be held at regular intervals, at the moment every two months.

The first meeting was held on the 24th November, 1984, at the Museum, when Dr. H. Inoue presided, and there were about 30 participants, predominantly young bryologists! Dr. K. Satake, National Institute for Environmental Studies, was the lecturer and talked about "Accumulation of heavy metals in aquatic bryophytes", including in his paper a review of published and recent works. A frank and candid exchange of views was made by the participants.

Future lectures are expected on the spore morphology of bryophytes and on the chemistry of bryophytes by Mr. T. Hirohama, Kanagawa Dental College and Prof. Y. Asakawa, Tokushima Bunri University, respectively.

H. Deguchi, Dept. of Biology, Fac. of Science, Kochi University, Akebono-cho, Kochi-shi, Kochi 780, Japan.

AN ERROR ABOUT MONGOLIA

DR. S. HUNECK (Halle) has written to say that there is an error in the caption of Fig. 2 in his article in *Bryol. Times* 29: 1-3, 1984. The person to the right of the picture is Dr. Hilbig and not Mangel, as stated.

SOCIETY NEWS (Contd.)

American Bryological and Lichenological Society

IN THE FALL of 1984, The Society published the first issue of *Evansia*, an information bulletin of the ABLs. This bulletin will publish articles and information of interest primarily to North American members, such as local floristic additions, biographical sketches, foray and meeting announcements and reports, as well as occasional articles on specimen handling and processing techniques, which might be of broader interest.

The bulletin will be issued irregularly, with three or four numbers projected per year. The first issue of *Evansia* has been distributed *gratis* to all North American members, and will likewise be sent *gratis* to all non-North American members, upon request. Receipt of subsequent issues will require payment of a \$5.00 fee, to be included with regular dues payment. Any member of the Society may elect to make the optional \$5.00 payment and will then receive all numbers of *Evansia* published during that year.

Non-North American members who wish to receive a complimentary copy of issue one should submit their request to Dr. W.R. Buck, Editor of *Evansia*, The New York Botanical Garden, Bronx, NY 10458, U.S.A.

The Society will meet the week of August 11, 1985, at the University of Florida in Gainesville. A foray will be held on Saturday and Sunday, the 10th & 11th of August, in the Ocala National Forest and Highlands Hammock State Park. Both of these are in central Florida, and they provide rich collecting sites for subtropical mosses and hepatics. Subtropical, hardwood swamps and mesic hammock habitats are to be studied, and additional stops will be made at a hydric hammock.

Dr. Dana Griffin, III, (Florida State Museum, University of Florida, Gainesville, Florida 32611, U.S.A.), is the foray leader. Contributed papers, a poster session, and a symposium on lichen systematics will occupy 12th - 14th August. Dr. Norton G. Miller, of the New York State Museum, Science Service, State Education Department Cultural Education Center, Albany, New York 12230, is the Program Chairman, and he will be happy to send additional information to anyone who writes for it.

Bryological Book of Records

The Largest Moss : by N. Takaki

RECENTLY, I received from Dr. A. J. Sharp, University of Tennessee U.S.A., an interesting picture of himself with a moss, as shown in Fig. 1. According to his letter, the giant moss held in his hand is a specimen of *Fontinalis dalecarlica* which he collected and identified in 1958, on Amchitka Island in the Aleutians. As indicated in the illustration, the length of this moss was equal to his height (166cm). It is much larger than the record of the largest moss stated in my recent article (*Bryol. Times*, 27:5, July 1984.). I am grateful to Dr. A. J. Sharp for offering this interesting picture and for giving me permission to publish it.

Biological Laboratory, Faculty of General Education, Aichiga - kuin University, Nisshin-cho, Aichi-ken, 470-01, Japan.



Fig. 1. Dr. A.J. Sharp, with *Fontinalis dalecarlica* on Amchitka Island

Desiderata

Wanted: Dry Specimens of *Metzgeria*

WE ARE MAKING biometric studies on the genus *Metzgeria* and should be very grateful to receive dry specimens of *M. furcata* (L.) Dum. and *M. conjugata* Lindb. specifying ecology and locality.

Dra. E. Ron, Dpto. Botánica, Facultad de Biología, Universidad Complutense, 28040 Madrid, Spain.

COMPUTER TECHNIQUES

COMPUTERS, particularly micro-computers, are being used increasingly by bryologists. They have many advantages for text editing ("word processing"), holding files of information and extracting from them, statistics, distribution maps, etc., at a price many can now afford. A number of colleagues are thus using, in their institutions and/or homes, "desk top" computers with the same capabilities and possibilities as the large computers used in university computer centres, 10 or 15 years ago. The access to such large computers was usually only possible for members of the controlling institution, and only for those prepared to spend the time and effort to master their use, or

who could find someone to do it for them. They were used by bryologists for various purposes such as floristic studies, vegetation analysis, herbarium maintenance and taxonomic research, but obviously not everyone was able to take advantage of these facilities. To-day, home computers present a much more "friendly" and "straight-forward" face to the would-be user. There is also a greater compatibility between computers, that allows the exchange of computer programs, either as printed listings (print-outs), or for users of the same models, as magnetic discs. This all helps to spread the advantages of the use of computers.

To increase contacts between computer users among bryologists, to demonstrate the possibilities of computer use in bryology, and to encourage workers in this field to use the benefits of these techniques, a new column entitled *Computer Techniques* is being established at the request of the Editor of the *Bryological Times*, and with the agreement of the Column Editor of the *Techniques Notebook* column, as an offshoot of that column. This new column will give reports of the use of computers in bryology (mainly for users of home computers, but not excluding larger machines), it will attempt to stimulate the exchange of ideas and experiences, and will provide tutorial-type information. Every computer user is invited to send contributions about their own programs or techniques or experiences with bought or borrowed programs, to one of the undersigned column editors. Those who are not yet computer users, but wish to become so, are invited to write with questions.

To get an overview of the present use of computers, a questionnaire will be enclosed with a future issue of the *Bryological Times*. This questionnaire will allow us to get information about the number of users, and the models and software used. Every contributor to this questionnaire will get a printout of the results, including a list of all of the users of the same or compatible models which will allow them to get in contact for software exchange, or exchange of information.

Jan-Peter Frahm, Universität Duisburg, Postfach 10 16 29, D-4100 Duisburg 1, B.R.D.

Brian O'Shea, 131, Norwood Road, London SE24 9AF, England, U.K.

Bryologia Africana

THIS PROJECT has been initiated to compile a bryophyte flora of tropical Africa. The project has been undertaken following a proposal made by Professor P.W. Richards at the International Bryological Congress, Tokyo, to set up an international committee to supervise the production of a flora and to seek institutional support for the project.

The Missouri Botanical Garden will provide the institutional support needed to administrate and publish the flora, and Dr. R.E. Magill will serve as general editor.

Operations of the project will fall into two parts: the first part will be undertaken by an international steering committee, i.e. circumscription and format of the flora, organization of editorial committees for Hepaticae and Musci, obtaining unidentified specimens, and identifying researchers interested in participating in the project. The second part of the operation will fall on the editorial committees. These small committees will be responsible for the organization and implementation of their part of the flora, communications with researchers, and editing the fascicles as they are submitted.

The first meeting of the steering committee of *Bryologia Africana* will be at the symposium of the International Association of Bryologists in Hungary in August, 1985.

R.E. Magill, Missouri Botanical Garden, St. Louis, MI 63166-0299, U.S.A.

[* See Resolution 2, *Bryol. Times* 21:4, Ed.]

Computerized Distribution Maps: by Jan-Peter Frahm, Duisburg.

THE SYSTEM DESCRIBED here is operated by a simple "menu"-style dialogue, operated from a visual display unit (VDU) screen, allowing a set of options which in turn allows further sets of options. These are illustrated in Figure 1. All data input can be scanned by taking the appropriate option on the output menu: see Figure 2 for an example. Every record held on the system receives a consecutive number, and the records to be listed are selected, by number, from the screen (the last number allocated being given for information). The printed lists are sorted by country, and additionally by a time period (i.e. from 1950 onwards or 1800 to 1900) and by altitudinal range.

Plotting horizontal and vertical distributions is possible on special base maps, of which the co-ordinates are incorporated in the program (Figures 3 and 4). The plotter has four different symbols available. For a printout of the map, the species name is asked for, together with the period, the altitudinal range and the number of the required symbol (e.g. symbol 2 for the period 1800-1900, 3 for 1901-1945 and 4 for 1946 to date, or one symbol for all records from 0-1,000m.) and another for all records over 1,000m.). Assigning one symbol and going on to the next co-ordinate takes about 1 second; the printout of a map with 60 dots using 4 different symbols takes about a minute.



Fig. 3. Distribution of *Rhodobryum roseum* in Germany by altitude.

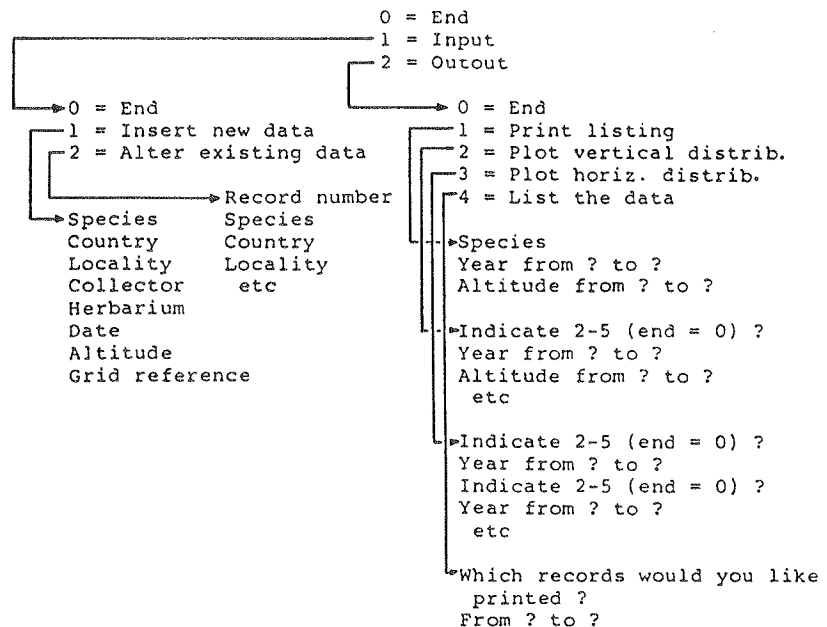


Fig. 1. The option menu

Brandenburg
 Nauen Duell B 1976 0031 3343
 Berlin Peters GOET 1912 0043 3444
 Spandau Paul M 1898 0043 3444
 Neuruppin Warnstorf M 1878 0052 3142
 Charlottenburg Brasch HBG 1882 0043 3445
 Neustrelitz Hintze HBG 1864 0074 2644
 Ruedersdorf Graebner B 1894 0055 3548
 Wannsee Reimers B 1948 0097 3544
 Templin Denckmann B 1933 0083 3644
 Oranienburg Reimers B 1950 0046 3245
 Eberswalde unbekannt B 1868 0055 3148
 Freienwalde Rossberg B 1930 0153 3250
 Hamburg
 Hummelsbuettel Timm HBG 1904 0030 2326
 Bramswald unbekannt M 0000 0006 2426
 Hessen
 Bastal; Mainzer Becken Freiberg M 1930 0135 6015
 Giessen Solms-Laubach GOET 1867 0165 5418
 Fachbachtal-Lahn Andres M 1930 0215 5612
 Herborn Andres M 1926 0205 5315
 Gersfeld-Rhoen Moenkemeyer HBG 1906 0766 5525

Fig. 2. An extract from the data file

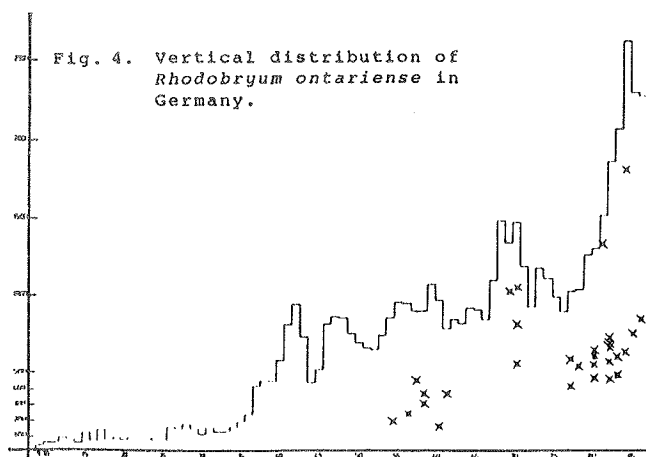


Fig. 4. Vertical distribution of *Rhodobryum ontariense* in Germany.

TECHNIQUES NOTEBOOK

Demonstration of growth-correlated acid efflux in bryophytes

by

Robert J. Thomas and
James G. Ellis IV

MECHANISMS UNDERLYING CONTROL of growth in plants have been elucidated primarily with work on commercially-important species. Many bryophytes, however, can be useful teaching and research tools for the study of growth processes. Two model examples have recently been described (Kaufman et al., 1982). Definitive features of both include specialization for rapid growth (including the absence of differentiated support and vascular tissues) and marked sensitivity to growth hormones.

Rapid growth responses to auxin are usually accompanied by proton efflux from the cytoplasm to the cell wall (Rayle and Cleland, 1970). Efflux may be attributed to stimulation of an ATP-dependent pump at the plasma membrane or endoplasmic reticulum (with formation of H^+ -containing vesicles that fuse with the plasma membrane in the case of ER). Acidification of the cell wall presumably activates pH-sensitive wall-degrading enzymes, leading first to wall loosening, and then to turgor-driven elongation.

Changes in wall pH associated with growth can be demonstrated by placing plants on agar containing a pH indicator dye (Wiesenseel et al., 1979). When setae of *Pellia epiphylla* sporophytes are grown in this fashion, for example, changes in indicator dye color develop. Acid efflux patterns in response to unilateral light, or to hormones applied in lanolin paste, are readily apparent after one to three hours (Fig. 1). A faint response can sometimes be detected within 15 minutes. The technique is simple, yet vividly demonstrates the importance of wall acidification in growth.

To prepare the agar-dye plates, a 0.378 g sample of bromocresol purple (Sigma Chemical Co.) is pre-dissolved in 10 ml of 0.02 N NaOH. This solution is then diluted with hot agar to 1 litre (0.71 mM). Hot agar is prepared by boiling purified grade agar in distilled water for one minute. We use a 0.5% (w/v) solution to produce a soft gel. While the agar-dye solution is still warm, its starting pH should be adjusted to 5.0 by adding a few drops of 1.0 N HCl. The dye will turn from deep purple or red to light orange in

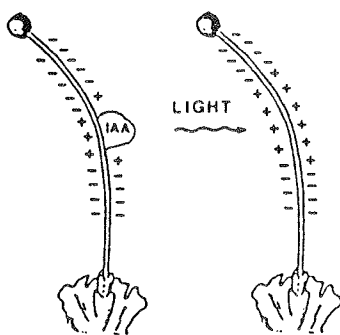


Fig. 1. Effect of 10 μ M indole-3-acetic acid (IAA) and light (10 μ Einsteins $m^{-2} sec^{-1}$) on acid efflux patterns of *Pellia* setae. Acid efflux is indicated by plus signs (+++). Areas where the pH has increased are indicated by negative signs (---). Plants were grown on agar-dye for about three hours at 23°C.

color at the correct pH. The agar-dye solution can then be dispensed into 100 X 15 mm Petri dishes (about 20 ml/dish) and allowed to cool. If the solution prematurely solidifies, just re-boil it.

Though most bryophytes have thin cuticles, we find it helpful gently to abrade the surface of the plants before they are pressed into agar-dye. Abrasion can be performed using lens grinding powder (aluminium oxide). The plant surface is scrubbed gently with the powder using a moist cotton-tipped applicator stick. A thorough water rinse should follow. If field-collected mosses are used, removal of surface contamination is also facilitated using cotton swabs and water rinses. Once the plants are abraded or cleaned, they should be transferred to the agar-dye plates with forceps or clean plastic gloves.

Bromocresol purple is very sensitive to pH changes. It turns yellow when the pH falls below 4.8 and deep red or purple at pH 5.5 or above. The amount of color that develops is directly dependent upon the intensity of the growth response.

It is possible to elaborate on the pH-dye procedure by adding growth regulatory substances along with bromocresol purple when the agar is prepared (Mulkey and Evans, 1981; Marshner et al., 1982). It is also possible to grow plants in the presence of dye-containing resin beads rather than agar (Pilet et al., 1983). When placed at intervals along the axis of the plant, the beads substitute for India ink as markers. Using the beads as markers, growth and pH change can be measured simultaneously.

References

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Department of Biology, Bates College, Lewiston, Maine 04240, U.S.A.

Deaths

DR. JOHN CHILD of Dunedin, New Zealand, died on November 10th, 1984, after a brief illness, at the age of 62.

An economist by training, John had far-reaching natural history interests. To cryptogamic botanists, he is best known for his popular accounts of New Zealand hepatics and mosses (with K.W. Allison) and New Zealand lichens (with W. Martin). He was well acquainted with many other groups of organisms, as well, and to spend time with John in the New Zealand "bush" was an entertaining and enlightening experience; he was a pleasant and flexible field companion. Many overseas workers would have become friends with John during their visits to New Zealand. They will have pleasant memories of times spent with a gentle, hospitable and truly educated man.

Allan J. Fife,
Botany Division, Department of Scientific and Industrial Research, Private Bag, Christchurch, New Zealand.

* Column Editor Prof. J.M. Glime.

FRANS VERDOORN (1906-1984): Personal Memories by P.W. Richards

FRANS VERDOORN gave up active work in bryology more than forty years before he died, so not many present-day bryologists know what a remarkable personality he was. Probably only the few now remaining of his own generation fully appreciate the importance of the contribution he made to the renaissance of bryology which began in the 1930's.

I first met him in 1934, but my earliest contact had been in 1931 (or perhaps 1930), when he invited me to contribute a chapter on ecology to his Manual of Bryology (1932). I willingly accepted, but said that I would not be able to finish the manuscript before the middle of June; I did not explain that this was because I was still a student and would be taking Part 2 of the Tripos examination at Cambridge in May.

While preparing my chapter I asked if I might see two other chapters on closely-related subjects, that on physiology by A. J.M. Garjeanne, and that on bryocoenology by H. Gams, both of which had already been completed. When they arrived I found that the English of these chapters left something to be desired and I asked Frans if I could try to improve it. For example,

Gams said that *Voitia nivalis* grew on "sheep's crottels", a word which he had doubtless dug out of some dictionary, but was unknown to me and would doubtless puzzle readers of the Manual. Frans, whose own English at that time was fluent, but far from perfect, was delighted with my revisions, and after that often asked me to correct manuscripts, announcements and other things written by himself or his contributors.

Verdoorn made many important contributions to the taxonomy of hepatics, especially the Frullaniaceae, the Lejeuneaceae Holostipae, and the general classification, but he worked very little on mosses. Perhaps his most valuable and influential contribution to bryology was the essay, "Bryologie und Hepatikologie, ihre Methodik und Zukunft", which was the introduction to his monograph of the Lejeuneaceae Holostipae, the two forming his doctoral dissertation for the University of Utrecht (1934). In this essay (in German, but with a long summary in English) he deals in an illuminating and practical way with aspects of bryophyte taxonomy ranging from the species concept and the problems caused by Stephani's later work, to such mundane matters as the best way to collect, label and store spe-

cimens. For Verdoorn a newly-described species "is an hypothesis which in course of time may become a probability." One may not agree with everything he says, and some parts of this essay are now out-dated, but much of it, as Schuster (1966) remarks, is still as valid as when it was written.

Though Verdoorn's original work has a lasting value, his influence in the 1930's was largely through his manifold activities as an editor. His sets of *exsiccatae* (Bryophyta Arduennae Exsiccata, 1928-29, Hepaticae Selectae et Criticae, 1930-39, and Musci Selecti et Critici, 1934-40) were models of their kind, and very useful. His yearbook *Annales Bryologici* began to appear in 1928, the same year as the new series of the *Revue Bryologique* under Pierre Allorge's editorship, and, like that, attracted new and interesting work.

Verdoorn's most influential publication was probably the Manual of Bryology (1932) consisting of chapters by sixteen authors (including himself). It deals with almost every branch of the subject and reflects his

[continued overleaf]

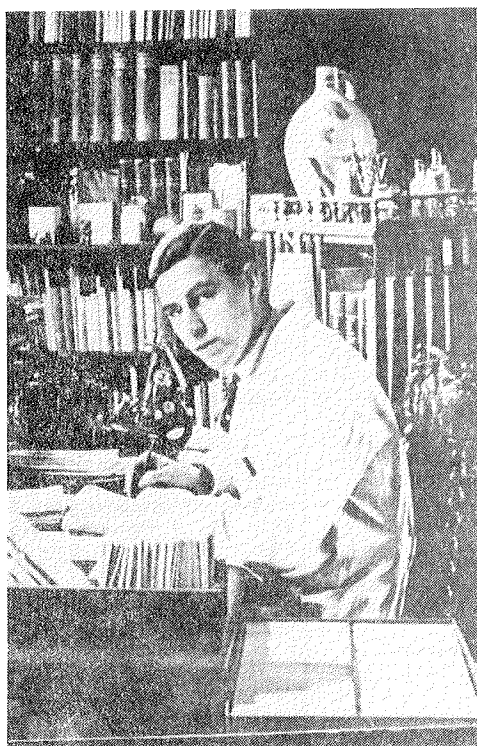


Fig. 1. Dr. Frans Verdoorn. On the left in student rooms at Begijnenvaart 10, Utrecht, c. 1930; on the right making his retirement speech from the Chair of Biohistory, Utrecht, October 1976. [Photographs: courtesy of Dr. S. R. Gradstein.]

[Continued from last page]

own view that bryology should be concerned with all aspects of the biology of the bryophytes, and not only their taxonomy. This broad outlook was the basis of the success of both the *Annales* and the *Manual*.

Verdoorn's botanical interests were not limited to bryophytes, though he never did research in other botanical fields. In 1938 he edited and published the *Manual of Pteridology* and in 1935 he began publishing *Chronica Botanica*, a periodical covering a wide field, with supplements such as *Plants and Plant Sciences in Latin America* (1945), and *Science and Scientists in the Netherlands Indies* (1945).

When he was young, Frans produced an unending stream of ideas for new botanical activities and projects. I have a letter from him (November 5, 1938) suggesting that I should join him in starting a bryological institute, giving post-graduate courses based on the University of Utrecht. In the same letter he proposed that I should organize "a second Naples or Woods Hole" for tropical biology in Fiji where, he says "everything is cheap and there is plenty of all kinds of tropical life".

All these schemes came to a halt when war broke out and in 1940 he left the Netherlands for America, setting up his editorial office at Waltham, Massachusetts. During the war he and his wife generously invited me to send my children to join his family, a kind offer which I decided not to accept.

When the war was over, he sold *Chronica Botanica* to an American publisher and returned to Utrecht, but not to bryology. His major preoccupation had become "bio-history", in which he had long been interested. He founded the Bio-historical Institute at Utrecht and continued to work there as long as his health permitted.

As a young man, Frans gave the impression of unceasing, almost phrenetic, activity. He worked incessantly, and on visits discussed botanical matters far into the night. For those who were also young, he was a great stimulator, and my own work on tropical ecology as well as on bryology owes much to his help and encouragement. Some of his elders, of more pacific temperament, found his restless activity trying. I remember that after one of his visits to the British Museum, the Keeper of Botany (Ramsbottom) complained, "the man's like a bloody windmill!"

The last time I saw him was when my wife, our young daughter and I took part in his very happy 60th birthday celebrations at Utrecht in July 1966. It was sad that his later years, in spite of the devoted care of his wife, Joop, were clouded by illness and mental depression. Many of his friends will regret that bryology, to which he made such a significant contribution in earlier years, ceased to be one of his major interests so early in his career.

References

- Schuster, R.M. (1966). *The Hepaticae and Anthocerotae of North America, Vol. 1*. New York, Columbia University Press.
- Verdoorn, F. (1934). *Studien über asiatische Jubuleae (De Frulaniaceis XV-XVII), mit Einleitung, Bryologie und Hepaticologie, ihre Methodik und Zukunft*. Proefschrift ter verkrijging van den Graad van Doctor in de wis- en natuurkunde aan de Rijks-universiteit te Utrecht. (Issued as Supplement IV to *Annales Bryologici*). The Hague, M. Nijhoff.

14, Wootton Way,
Cambridge CB3 9LX,
England.

W. E. NICHOLSON (1866-1945)

I AM PREPARING A PROFILE of the eminent bryologist and hepatologist, W.E. Nicholson (1866-1945), who lived most of his life at Lewes, in Sussex (England) and who was a solicitor by profession. He collected in many parts of Europe, including Crete, Portugal and Sicily, as well as in Lapland, often being accompanied by his friend H. N. Dixon. He also made a substantial contribution to our knowledge of the bryophyte flora of the counties of Cornwall and Sussex in England.

His herbarium and diaries are kept at the Botany School, University of Cambridge. I am anxious to obtain:-

1. Copies of letters to or from him.
2. Vignettes of his life.
3. Details of herbaria in which there are substantial collections by him.
4. Photographs of him, or which pertain to him.
5. Any other information about W.E. Nicholson.

I would appreciate hearing from readers who can assist me.

Dr. Philip E. Stanley, 35 Luard Road, Cambridge CB2 2PJ, England.

Editorship Advances in Bryology

AS ANNOUNCED EARLIER, Dr. W. Schultze-Motel has resigned from his post as Editor of *Advances in Bryology*, a position held since the establishment of this series in 1979.

As his successor, our President, Dr. H. Inoue, has now appointed Dr. N. G. Miller from the New York State Museum at Albany, U.S.A., who has accepted this responsibility for the next two volumes.

On Behalf of Council and the Editorial Board, I would like to express our sincere gratitude to Dr. Schultze-Motel for his efforts to get this valuable series off the ground. The success of this series is indicated by the announcement of the publisher that the first volume is already out of print, and that a reprint is being prepared.

We look forward to a fruitful continuation of this important series, and wish Dr. Miller all success.

Dr. S. R. Gradstein,
Secretary IAB,
Institute of Systematic Botany,
Heidelberglaan 2,
3584 CS Utrecht,
The Netherlands.

Graduate Research Position Available

I ANTICIPATE HAVING one graduate research position available, for a Master's or Ph.D. degree candidate, beginning in June 1985, to continue our study of the effects of acid rain on boreal bryophytes. The candidate will be required to help with fieldwork on Isle Royale National Park, with field spraying experiments, to use the computer to analyse data, and to write a portion of the annual report. It is essential that the candidate has an undergraduate degree in biology, or a related field, and is able to begin work no later than 15 June, 1985. Experience with bryophytes or lichens is desirable.

The GRA stipend will be \$7,600 for one year with tuition paid by the grant. The same amount of support may be available for a second year, through a graduate teaching assistantship.

Interested persons should contact immediately:

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

Applications should be completed before 1st April, 1985.

IAB Conference of Bryo-Ecology

5 - 10 AUGUST, 1985.

Third Circular, 17th December, 1984.

WE ARE VERY PLEASED to announce that by the final deadline, 15 December, we had received more than 60 abstracts. This day we have submitted all typescripts to the printer of the Abstracts.

We would like to let you know that the registration fee is to be paid upon your arrival. You can register on the 4th of August in your hotel, from 10.00 a.m. to 8.00 p.m., or at the place of the Conference on the 5th of August between 8.00 and 9.30 a.m. Participants from the Rouble monetary zone can pay their fee in Hungarian forints, but others can only pay in U.S. dollars or equivalent hard currencies.

The hotel accommodation offered in the 2nd Circular is optional and if you do not want to use it, please just cancel this part of your Order Form. But please send your form back, even in this case, because it serves as a registration form for us.

Prof. T. Pócs,
Institute of Ecology and Botany,
Hungarian Academy of Sciences,
VÁCRÁTÓT, H-2163.

Meeting of Czechoslovakian
Bryologists

ON 18-19 SEPTEMBER, 1984, a meeting of Czechoslovakian bryologists was held at the Budišov Castle, near Třebíč, Moravia. 16 bryologists participated in the meeting, both professionals and amateurs, representing the majority of persons concerned with the study of bryophytes in Czechoslovakia. The principal aim of the meeting was to co-ordinate the activities of Czechoslovak bryologists, mainly in research on mosses, to keep pace with hepaticological activities.

All issues were presented in round-table discussions, each introduced by a short exposition of the problem. The following main themes were discussed:

(i) mapping of Czechoslovakian mosses; (ii) projected bibliography of Czechoslovakian bryophytes; (iii) preparation of a list of Czechoslovakian mosses; (iv) revision of small moss collections held outside of the main collections; (v) chromosome studies on bryophytes occurring in Czechoslovakia; (vi) bryologically poorly-known areas in Czechoslovakia; (vii) projected prodromus of bryophyte communities in Czechoslovakia; (viii) a detailed discussion of endanger-

Please send, or be prepared to hand over, the manuscript of your lecture ready for printing at the latest at the Conference. Only in this way can we ensure that the Proceedings will be printed in the first half of 1986. We have a contract with the Publishing House of the Hungarian Academy of Sciences, with strict deadlines. Your manuscript can contain no more than 12 typewritten pages (inclusive of line drawings), each page with a maximum of 30 lines and 60 letter spaces per line. The heading should consist of the title and the author's name and address. Reference lists should only include papers cited in the text and be similar in style to those in the latest issues of Acta Bot. Hung., a sample page of which will be sent on request.

Until the 15th of March, please refer any problem to Prof. T. Simon, after which both of us will be available. We expect to send a 4th Circular with final information in May.

Prof. T. Simon,
Department of Plant Taxonomy and
Ecology of the Eötvös L. University,
Budapest, Kun B. tér 2, H-1083.

ed bryophytes.

The participants decided to organize a similar meeting in two years' time.

Dr. Ivan Novotný, Botanical Department of the Moravian Museum,
BRNO 602 00, Czechoslovakia.

NEWS from VÁCRÁTÓT

THE INSTITUTE OF ECOLOGY AND BOTANY Hungarian Academy of Science, Vácrátót, was visited by Dr. R. Ochryra from 21 November to 12 December 1984, and by S.R. Gradstein from 13-21 December 1984, to work on joint papers with T. Pócs. T. Pócs is travelling in Tanzania from 13 January until 13 March 1985, together with Hungarian, Norwegian and Tanzanian biologists to work on the joint Tanzanian-Swedish-Hungarian Usambara Rain Forest Project. This is the third time, within the framework of this project, when he has been able to do field work, mostly in the Usambara Mountains, and collect bryophytes. The specimens, after identification, will be deposited in DSM, Lushoto, UPS, VBI and in other herbaria, such as G, MO, and BR.

T. Pócs, Research Institute for Botany of the Hungarian Academy of Sciences, 2163 Vácrátót, Hungary.

THE FOURTH MEETING OF
CENTRAL AND EAST
EUROPEAN BRYOLOGISTS
1985

Second Circular,

1 November, 1984.

I AM DELIGHTED to be able to inform you that we have received more than 100 preliminary registrations for the meeting.

The programme has been finalized as follows:-

ARRIVAL: Preferably on 11th August.

SESSIONS: 12th-13th August, to be held at the Ho Chi Minh Teacher Training College in Eger. EXCURSION FOR ALL PARTICIPANTS: 14th August, to the Zemplén Mountains. The excursion will end with wine-tasting in the cellars of Tokay.

REGISTRATION FEE: 1000 Hungarian Forints/accompanying participants 500 Forints/. The registration fee covers the costs of the conference hall facilities, excursions, the wine tasting in Tokay, as well as the printing costs of the summaries and proceedings.

SUMMARIES: The summaries of your lecture should be posted to S. Orban, to arrive not later than 15th February 1985, including the title and name of the author of the lecture with full name and address. The text must not exceed 20 typewritten lines, each with no more than 65 letter spaces.

ACCOMMODATION: Will be arranged according to your wishes. Please confirm your registration and accommodation by returning the registration form to the undersigned.

Dr. Sandor ORBÁN, Botanical Department of the Ho Si Minh Teachers' College, EGER Pf. 43, H-3301, Hungary.

EXCHANGE AND MART

COLUMBIA UNIVERSITY PRESS, 136, South Broadway, Irvington, New York 10533, U.S.A. are advertising Crum and Anderson's two volume Mosses of Eastern North America at a special sale price of U.S. \$ 50.00 (list price \$ 90.00) until 31 March, 1985.

There is no indication that this offer is restricted to residents of the United States.

To order a copy, write for their Special Sale order form, since the discount applies only to orders that are pre-paid (by cash, cheque, money order or credit card), and placed on this order form.

Personalia

DR. ROB GRADSTEIN, Dr. HARRIE SIPMAN and DR. BEN VAN ZANTEN, were in Colombia during September 1984, for bryological and lichenological fieldwork jointly with DR. JAIME AGUIRRE and MR. EDGAR LINARES of the Instituto de Ciencias Naturales, Bogotá. Sporulating material of almost 200 different bryophyte species (including about 80 species of liverworts!) was collected for spore germination experiments. About 50 numbers were obtained for the Bryophyte Neotropica Exsiccata.

Dr. Gradstein and Dr. Sipman will be participating in an international expedition to Guyana during February and March, 1985, in the framework of the newly started "Flora of the Guianas" project of the herbaria of Berlin, Cayenne, New York, Paris, Utrecht (co-ordinating centre), and Washington. They will visit the northern slopes of Mt. Roraima and lowland forests around Georgetown (Guyana) and Cayenne (French Guiana). Eventually, with other specialists, they will write up treatments of the liverworts and the lichens for the Flora.

MRS. LIN, PANG-JUAN of the South China Institute of Botany, Kwangchow, China, is working at the Hattori Botanical Laboratory from October 1984, until March 1985, preparing a work on Chinese *Frullania* jointly with Dr. S. Hattori.

NAOKI NISHIMURA, Okayama Bunri University, successfully presented a thesis entitled "A revision of the genus *Ctenidium* (Musci)" and obtained a D.Sc. degree from Hiroshima University (Chairman of the investigation committee: Prof. H. Ando). A part of his thesis will be published in the *Journal of the Hattori Botanical Laboratory*. Revision of the genus *Ectropothecium* will be his next bryological work.

BERNARDINO

RIVADAVIA MUSEO (BA)

IN ORDER TO MAINTAIN adequate records of loans and exchanges from the Cryptogamic Herbarium of the Museo Argentino de Ciencias Naturales, "B. Rivadavia", colleagues and institutions are asked to direct their official correspondence related to these items either to the Director of the Museum or to the Head of the Cryptogamic Division.

Dr. G.G. Hässel de Menéndez, Jefe Division Criptogamia, Museo Argentino de Ciencias Naturales "B. Rivadavia", Av. Angel Gallardo 470, Buenos Aires, Argentina.

Recent Publications

Advances in Bryology, 2: 1-229, 1984.

Australasian Bryol. Newsletter, No. 11: 1-10, 1984.

Bryolatina, No. 4: 1-4, 1984.

Bryologist, 87 (3): 185-292, 1984.

Bryologische Beiträge, 4: 1-114, 1984.

Bull. Brit. Bryol. Soc., No. 44: 1-40, 1984.

Cryptogamie Bryol. Lichen, 5(3): 239-332, 1984.

Hikobia, 9 (1-2): 1-205, 1984.

J. Bryol., 13 (2): 153-318, 1984.

Lindbergia, 10 (1): 1-64, 1984.

Proc. Bryol. Soc. Japan, 3 (12): 189-204, 1984.

Taxon, 33 (4): 563-826, 1984.

INOUE, Hiroshi, 1984. *The genus Plagiochila* (Dum.) Dum. in *Southeast Asia. Academia Scientific Book Inc.*, Tokyo, X + 142p., 76 plates, hardcover.

For almost 30 years, Dr. Hiroshi Inoue has devoted himself to the study of *Plagiochila*, the largest genus of liverworts with an estimated 500 species (after revision). Tropical rain forests are particularly rich in *Plagiochila*, where it is not unusual to find a dozen different species in a single forest stand. This book deals with all species occurring in "Southeast Asia", which is defined as including the Philippines, Moluccas, Celebes, Borneo, Java, Sumatra, Malaya and the Andaman Islands. Sixty-seven species are described and lavishly illustrated by full-page plates, one for each species. A general morphological introduction and a revised classification for the entire family Plagiochilaceae are given, as are notes on extra-territorial species which elevates this work beyond the level of a regional revision.

Dr. Inoue's book is certainly one of the most comprehensive - and due to the magnificent illustrations, also one of the most beautiful - works on *Plagiochila* which each bryologist interested in the taxonomy of this group should have. The book is sold by the publisher at the price of 8,500 yen (about US \$ 30.00), but IAB members may order it directly from the author, Dr. Hiroshi Inoue, National Science Museum, Hayakunin-cho, Shinjuku-ku, Tokyo, Japan, at a discount of 15% (including postage).

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

SPRUCE, R. 1884-85. *Hepaticae of the Amazon and the Andes of Peru and Ecuador. Trans. Proc. Bot. Soc. Edinb.* Vol. 15. [Reprinted, 1984. *Hepaticae of the Amazon and the Andes of Peru and Ecuador*, with an introduction and index with updated nomenclature by Barbara M. Thiers. *Contr. N.Y. Bot. Gdn.*, 15: I-XII, [1-v] vi-xi [-xii], 1-588 [-89], Tabs. 1-XXII, (1) - (14).] Price within U.S., \$42.15; elsewhere \$43.35. Available from Scientific Publications Office, New York Botanical Garden, Bronx, New York 10458, U.S.A.

Bryologists will welcome the reprinting of this classic work which, in spite of being first issued 100 years ago, is still the most important single volume on South American hepatics.

In her introduction, Dr. Thiers outlines the life of Spruce and comments on his bryological achievements, including his original scheme for classifying the hepatics and the characters on which it was based. She also discusses the importance of the specimens he distributed in 1892 under the title "Hepaticae Spruceanae: Amazonicae et Andinae". Dr. Thiers has also provided a new Index, in addition to Spruce's original, in which she corrects his omissions and errors and updates the nomenclature of his new species and varieties "to allow easier access to them in modern literature and in herbaria".

Both Dr. Thiers and the New York Botanical Garden are to be congratulated on the publication of this highly-important reprint.

ADVANCES IN BRYOLOGY

Vol. 2

(edited by W. Schultze-Motel)

Now Published

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

Available from: J. CRAMER VERLAG, In den Springaekern 2, D-3300 Braunschweig, B.R.D., at a specially-reduced price to all fully paid-up members of IAB.

INDEX to

BRYOL. TIMES Nos. 1-25

DR. W.R. BUCK, of the New York Botanical Garden, has compiled a very detailed Index to the first 25 issues which it is hoped will be ready for circulation with the March issue.

I A B PUBLICATIONS

THIS IS A LISTING OF PUBLICATIONS sponsored by the International Association of Bryologists, of which copies are still available. Prices are in US \$, or the equivalent in any other currency. Please note that for some publications orders should be pre-paid.

Serials

1. IAB Newsletters: Bulletin of Bryology Numbers I-XX, 1972-1981; The Bryological Times 1- , 1980 - . Copies of back issues are available from the Secretary of IAB at the price of US \$ 1.00 per issue for IAB members and US \$ 2.00 for non-members. Prices are inclusive of postage. Orders pre-paid!
2. Advances in Bryology Vol. 1: 1-562, 1981; Vol.2: 1-229, 1984. Published by J. Cramer, Verlag, In den Springaackern 2, D-3300 Braunschweig, W. Germany. Regular price DM 200. Subscription price available. Paid-up members of IAB may obtain one copy of each volume at a substantial discount price direct from the publisher.

Proceedings of IAB Meetings

1. Taxonomy and evolution of bryophytes (Boulder 1973). J. Hattori Bot. Lab., No. 38: 1-163, 1974. To be ordered from the Hattori Botanical Laboratory, Obi, Nichinan, Miyazaki Pref., 889-25, Japan. Price \$ 7.50 (IAB members), \$ 9.40 (non-members).
2. Aspects of experimental bryology; geography and ecology of bryophytes; taxonomy of bryophytes (Leningrad 1975). J. Hattori Bot. Lab., No. 41: 1-230, 1976. To be ordered from the Hattori Botanical Laboratory, Obi, Nichinan, Miyazaki Pref., 889-25, Japan. Price \$ 12.50 (IAB members), \$ 17.50 (non-members).
3. Bryophyte taxonomy: methods, practices and floristic exploration (Geneva 1979). Beih. Nova Hedwigia, Vol. 71: 1-558, 1982. To be ordered from J. Cramer, Verlag, In den Springaackern 2, D-3300 Braunschweig, W. Germany. Price DM 200.
4. The biological significance of morphological characters in bryophytes. (Vancouver 1980) Bryologist, Vol. 84: 149-215, 1981. To be ordered from the ABLS Manager, Paul L. Redfearn Jr. Dept. of Life Sciences, Southwest Missouri State University, Springfield, MO 65802, USA. Price \$ 4.00, inclusive of postage. Orders should be prepaid by international money order or by cheque payable through a bank in the U.S.A.
5. Bryogeography of Australasia and the Pacific; bryophytes: ecology and reproductive biology (Sydney 1981). J. Hattori Bot. Lab., No. 52: 1-302, 1982. To be ordered from the Hattori Botanical Laboratory, Obi, Nichinan, Miyazaki Pref., 889-25, Japan. Price (Yen) ¥3,700 (IAB members), ¥5,300 (non-members), inclusive of postage.
6. Biosystematics and structure of bryophytes; physiology and morphogenesis of bryophytes; chemo-taxonomy of bryophytes (Sydney 1981). J. Hattori Bot. Lab., No. 53: 1-304, 1983. Orders and price as 5 above.
7. Phytogeography of bryophytes in Asia and the Pacific; recent aspects of physiology and ecology; bryology for the 80's; taxonomy and systematics. (Tokyo, 1983.) J. Hattori Bot. Lab., No. 55: 1-325, 1984. To be ordered from the Hattori Botanical Laboratory, Obi, Nichinan, Miyazaki Pref., 889-25, Japan. Price (Yen) ¥5,500, inclusive of postage.
8. Biogeography; ecology; morphology and cytology; physiology and morphogenesis; chemistry. (Tokyo, 1983.) J. Hattori Bot. Lab., No. 56: 1-269, 1984. Price (Yen) ¥4,600, inclusive of postage. To be ordered as 7 above.

Other IAB Publications

1. Index Muscorum Supplementum: 1974-75, 1976-77, 1978-79; 1980-81; by M.R. Crosby & C.R. Bauer. Published in Taxon. Reprints of each supplement are available from the ABLS Manager, Paul L. Redfearn Jr. (see 4 above for address), at the price of \$ 2.00 (inclusive of postage). Orders should be prepaid by international money order or by cheque payable through a bank in the USA. Standing orders for future Supplements will also be accepted.
2. Index Hepaticarum Supplementum: 1974-75, 1976-77, 1978-79; by J.J. Engel. Published in Taxon. Orders and price as 1 above.
3. Bryological herbaria. A guide to the bryological herbaria of the world, ed. 1. By Z. Iwatsuki, D.H. Vitt & S.R. Gradstein. Bryophytorum Bibliotheca, Vol. 8: 1-144, 1976. J. Cramer, Verlag, In den Springaackern 2, D-3300 Braunschweig, W. Germany. Price DM 20.00 (subscription) or DM 25.00 (regular).
4. Directory of bryologists and bryological research, ed. 2. By S.R. Gradstein. Regnum Vegetabile, Vol. 89, 1-81, 1979. Regular price: D.Fl. 32. Paid-up IAB members may order one copy at 50% discount from the IAPT, Heidelberglaan 2, 3584 CS Utrecht, The Netherlands.
5. A Conspectus of bryological taxonomic literature, Fasc. 1. (Africa), 1979. 141pp. By S.W. Greene & A.J. Harrington. Penicuik, ITH. Available from the Institute of Terrestrial Ecology, Bush Estate, Penicuik, Midlothian EH26 0QE, Scotland. Price £5.00, inclusive of postage.
6. Index to plant chromosome numbers: Bryophyta. By R. Fritsch. Regnum Vegetabile, Vol. 105: 1-268, 1982. Regular Price: \$ 17.00. Paid-up members of IAB can order one copy at 20% discount by sending a cheque for \$ 13.00 to IAPT, Heidelberglaan 2, 3584 CS Utrecht, The Netherlands.

Publications in press: due Spring, 1985.

1. Index hepaticarum Lemnidium - Hytilopsis. Ed. H. Bischler. To be published by J. Cramer, Verlag, In den Springaackern 2, D-3300, Braunschweig, W. Germany. Price to be announced.
2. Compendium of bryology. Ed. D.H. Vitt, S.R. Gradstein & Z. Iwatsuki. To be published by J. Cramer, Verlag, In den Springaackern 2, D-3300 Braunschweig, W. Germany. Price to be announced.

DIARY

1985

- Feb. 17-18. SBLS. Identification days. Botanical Institute, University of Zürich. Further details from Dr. K.A. Ammann, Syst.-Geobot. Institut, Altenbergrain 21, CH-3013, Bern, Switzerland.
- April 17-24. BBS. Chichester, West Sussex. Spring Field Meeting. Local Sec.: Mr. R.C. Stern, Botany Bay, Main Road, Fishbourne, Chichester, West Sussex PO18 1AX. For details see Bull. BBS 44 & 45.
- April 20-21. SBLS. Valais Central (around Sion) [Central Wallis better.] Annual Assembly with paper-reading sessions and excursions. Further information from K. A. Ammann, Syst.-Geobot. Institut, Altenbergrain 21, CH-3013, Bern, Switzerland.
- June 10-14. AETFAT. St. Louis. The 11th AETFAT Congress will include a symposium on Systematics and floristics of African Bryophyta on Friday 14th. Further information from Dr. R.E. Magill, AETFAT Secretariat, Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri, 63166, U.S.A.
- June 30 - 6 July. NBS. Annual Meeting and Field Excursion. Knaiben, Vest-Agder, SW Norway. Local Sec.: Arne Pedersen, Snippen 7F, N-0566, Oslo 5, Norway. Further information from A. Pedersen at the above address.
- July 4-10. Brighton. England. Third International Congress of Systematic and Evolutionary Biology. Bryophyte Symposium in collaboration with the BBS. For preliminary details, see Bryol. Times, 27:8.

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

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

Aug. 5-10. IAB. Budapest and Vác-rátót. Conference on Bryoecology. For 3rd circular, see this issue, page 9.

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

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

Aug. 12-14. CEBWG. Eger, Hungary. 4th Biennial Meeting. For 2nd circular, see this issue p.9.

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

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

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

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

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

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

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

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

THE INTERNATIONAL ASSOCIATION OF BRYOLOGISTS publishes The Bryological Times every two months, and the Advances in Bryology every two years. Material for The Bryological Times can be sent at any time, but submission dates for the Advances should be discussed with its editor. The editors do not accept responsibility for the views of authors.

For details regarding membership of the International Association of Bryologists (currently U.S. \$ 8.00 p.a.), write to the Honorary Secretary, Dr. S.R. Gradstein, Instituut voor Systematische Plantkunde, Heidelberglaan 2, 3584 CS Utrecht, The Netherlands.

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ITEMS FOR THE NEXT ISSUE to be with the Editor, Dr. S.W. Greene, Department of Botany, The University of Reading, London Road, Reading RG1 5AQ, Berkshire, England (Telex 847813 RULIB) by 1st March at the latest. Items for the regular columns should be sent direct to the column editors, e.g. The Techniques Notebook to Dr. Janice Glime, Department of Biological Sciences, Michigan Technological University, Houghton, Michigan 49931, U.S.A.; and Computer Techniques to Dr. Jan-Peter Frahm, Biologie, Gesamthochschule Duisburg, 4100 Duisburg 1, Postfach 919, Lotharstrasse 65, West Germany, or Mr. B. O'Shea, 131 Norwood Road, London SE24 9AF, England.