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TAXONOMIC METHODOLOGY IN BRYOLOGY

(Part I)*

by

Jan-Peter Frahm

How many species of bryophytes exist in the world? Textbooks usually give 25,000 species (15,000 mosses, 10,000 hepatics). The most recent count of the number of valid moss names seems to be that of Walther (1983), who counted 16,455 species in Index Muscorum and Supplements up to 1977. In recent years, about 50 species of mosses and liverworts have been described as new each year. On the other hand, critical revisions of genera show a considerable "loss" of species. According to Touw (1974), the percentage of recognized taxa varies from 20 to 45%. Of the taxa described after 1930, 73% have been synonymous and the total number of mosses is probably much lower than 7000 species.

This exactly fits my experience with revisions of the genera of Campylopodioideae. Generally, the number of species placed in synonymy is much higher than the number of species described as new. This concerns most tropical bryophytes, as about 60% of the species of this group are tropical. There does not seem to be the large number of undescribed bryophyte species in the tropics as for instance zoologists have found, who have estimated the number of undescribed animal species in the tropics from one to several million.

So we must confess that we are working on a group of organisms without having any estimate of the total number of species. This is due to the lack of a fundamental base of generic revisions on a world-wide basis. Such revisions are sometimes said to be old-fashioned, as they are based on the application of mostly traditional methods. But on the other hand, these revisions are the basis for every other discipline of bryology, especially for phytogeographic or phylogenetic studies.

A major problem is the revision of genera with high numbers of species. If one could calculate the number of genera revised in relation to the number of species included in each, it would presumably be evident that most genera with only a few species have been completed. Revisions of large genera are said to be time-consuming and difficult, because of the large number of specimens, copious literature, and taxonomic and geographic data. In fact, monographing a genus with 30, 50 or more species seems to be impossible to do in a reasonable time, especially for students. However, it seems it would be possible if it is done efficiently.

In the business world, each process is highly structured and wasted time is minimized. Taxonomic work as well can be efficiently structured in much the same way. For that reason a working scheme has been devised based on my experience with my own revisions (as, for instance the 256 names of *Campylopus* described from Africa revised to include only 50 species), and revisions prepared by students, who have at Duisburg only half a year available for preparing a thesis for a teachers examination.

This working scheme is proposed and briefly explained here. It shows that taxonomic revisions can be performed in a reasonable time with the highest efficiency and without any delay caused by an incorrect sequence of work-steps. I do not intend, of course to give more experienced colleagues a lecture on how to do taxonomic work! But the scheme may be a help to students beginning taxonomic work, and may

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* A contribution to the Taxonomic Column, edited by D.H. Vitt (Mosses). For address see Bryol. Times, 31: 9.

ABOUT THE TEACHING OF TROPICAL BRYOLOGY

by

Claudio Delgadillo

One of the main problems that confronts the development of bryology in tropical areas is the shortage of resident bryologists who can teach or train the subject to others. While in non-tropical countries major universities usually offer one or more courses and seminars or guide research, these activities are hardly heard of at universities in the tropics. The difficulties are manifold. Even if there is a resident bryologist usually there are no adequate facilities such as a herbarium and a library; in many areas local bryophytes are poorly known so that taxonomically- or floristically-oriented courses are not possible and taxonomic literature may not cover many of these areas. Other types of course work may demand knowledge of the biological characteristics of bryophytes while standard textbooks cite examples and illustrate phenomena mostly from temperate bryophytes. In addition, most texts are written in languages foreign to many of the students and thus of limited value especially, at the undergraduate level.

Each resident bryologist is undoubtedly involved in teaching and research programs. His or her activity will eventually yield technical articles, textbooks, a herbarium and a library and the much needed locally-based bryologists. This will all take time and we need results before human impact disturbs tropical habitats much beyond recovery. Hence co-operation with bryologists elsewhere is probably the best way to accelerate the teaching and training of new bryologists.

Many members of IAB have expresed their willingness to assist tropical bryologists with identifications or other information beyond recovery. Hence co-operation with bryologists elsewhere is

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stimulate the start of more revisions, even treatments of larger genera.

There are, principally, two methods of preparing taxonomic treatments (i) the specimen-orientated method and (ii) the type-orientated method.

The first method starts a study from zero. All taxa already described are at first not considered; only specimens that are examined thoroughly and these are classified independently. After that the taxa described are taken into account and compared with results of the initial classification. Theoretically this seems to be the most independent way to produce a monograph, but it has disadvantages in practice. It takes an enormous amount of time to obtain one's own ideas of how to classify 3,000 or 5,000 specimens. All specimens of different herbaria must be continually filed as new and sorted according to developing ideas. At the least this method needs a great deal of taxonomic experience, which a student usually does not have. Although this method works without any predisposition and may give the best results, I cannot recommend it for beginners.

The second method is the type- (or better the type specimen-) oriented method. This concerns revisionary studies, which are based primarily on the study of all type material. All other specimens examined are compared with the species concept derived from the type specimens. This seems to be the easier of the two methods and is more commonly used. It also gives results in a reasonable time and is recommended for students.

The following is an outline of a working scheme for mosses and consists of 12 steps; it is summarized in Fig. 1.

1. Compilation from Index Muscorum and supplements of a list of all legitimate species with synonyms on file cards to create a taxonomic file.

2. Set up a list of all authors of taxa (see Sayre 1977 for the location of their herbaria). From these herbaria, the type specimens are requested on loan.

3. Look at the distribution data in Index Muscorum to determine which additional herbaria should be taken into account in requesting the loan of further material. From these herbaria, additional specimens can be requested using information in the Compendium (Vitt et al., 1985).

4. While waiting to receive the requested loans, the copies of the type descriptions

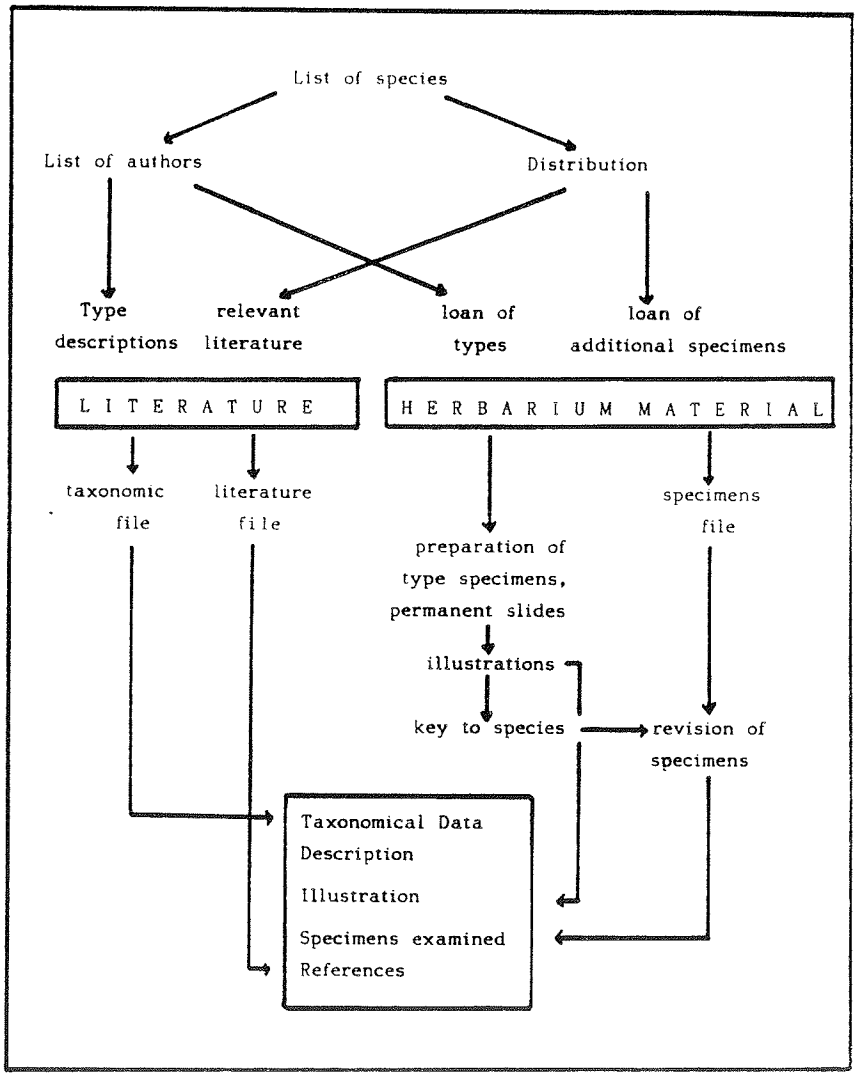

Fig. 1. Working Scheme for Taxonomic Studies

(protologues) are ordered through the inter-library loan system or copied in the library. The information on the type material is extracted and added to the taxonomic file.

5. Additionally, all available literature from the important geographical regions is examined.

6. All literature is compiled in a literature file.

7. When the herbarium specimens arrive, all type specimens are studied first. They are examined and permanent microscope slides are prepared. All essential characters are illustrated and plates with illustrations are provided for each type. If necessary, nomenclatural problems are studied as, for instance, lectotypification.

8. The labels of the type specimens and all other specimens received on loan are copied and glued on file cards. These file cards are arranged alphabetically by species name; notes can then be added during the study of the material.

9. All illustrations of the types are arranged for easy access, for example by pinning them up on a wall or bulletin board. By comparison to the illustrations, possible synonyms can be detected. These initial suspicions can be assessed by then comparing the permanent slides.

10. For the species remaining, a key is set up (again with the help of the illustrations and the slides). During its preparation further synonyms may be detected.

11. Using this key, the non-type specimens from the herbaria are studied to determine whether they fit into the species concept derived from the type. In this manner, misidentified specimens can be revised, specimens belonging to other genera can be

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excluded, or specimens representing undescribed species can be found.

12. In order to prepare the manuscript, the existing files and illustrations are simply merged together, only descriptions have to be added.

This revision thus consists of the following:

a. taxonomic data (with taxa, citations, and type information) taken from the taxonomic file;

b. a description: this is provided with the help of the illustration, microscope slides, and examination of the herbarium specimens to cover variation of characters. Special notes are taken from the comments on the specimen file;

c. an illustration: this is taken, in the case of several synonyms, from the best or most typical one;

d. a list of specimens examined compiled from the specimen file; and

e. references: these are compiled from the literature file.

REFERENCES

SAYRE, G. 1977. Authors of names of bryophytes and the present location of their herbaria. Bryologist, 80: 502-521.

TOUW, A. 1974. Notes on taxonomic and floristic research on exotic mosses. Journal Hattori Botanical Laboratory, 38: 123-128.

VITT, D.H., GRADSTEIN, S.R. & Z. IWATSUKI. 1985. Compendium of Bryology. Bryophytorum Bibl., 30: iii-vii, 1-335.

WALTHER, K. 1983. Bryophytina. Laubmoose. In A. Engler (ed.), Syllabus der Pflanzenfamilien. 13 Aufl. Berlin Stuttgart, Gerbrüder Borntraeger, V.2, 1-108.

Universität Gesamthochschule Duisburg, Postfach 10 16 29, D-4100, Duisburg 1, B.R.D.

Change of Name

The name of the Institute of Forestry and Soil Science, Academia Sinica, where Prof. Gao, Chien; Kuangchu Chang; and Tong Cao are working, has been changed to Shenyang Institute of Applied Ecology, Academia Sinica. The new address is: Department of Plant Resources, Shenyang Institute of Applied Ecology, Academia Sinica, Shenyang, Liaoning Province, CHINA.

New Book

A photographic Field Guide to Mosses, Lichens & Ferns of Northwest North America by Dale Vitt, Janet Marsh and Robin Bovey, contains 420 colour photographs of these important northern plants. Recently published by Lone Pine Press of Edmonton and the University of Washington Press, Seattle, this book also includes distribution maps, ecological comments, and treatment of diagnostic characteristics. An introductory portion briefly describes the vegetation of northwest North America and discusses the biology of the three groups of plants. Keys are provided. The book is available from some book stores or contact Dale Vitt, Department of Botany, University of Alberta, Edmonton, Alberta, Canada, T6G 2E9 for a copy. It sells for $24.95 Cdn.

DIARY

For explanation of acronyms, see Bryol. Times, 31:7-8, 1985.

1989

Feb. 24-27. IAB Computer Workshop Mont Rigi, Belgium. See Bryol. Times, 49(Suppl.): 13. Further information from Dr. J.-P. Frahm, Universität Gesamthochschule Duisburg, Postfach 10 16 29, D4100 Duisburg, B.R.D.

March 23-30. BBS Special overseas spring meeting, The Algarve. Local Sec.: Mr. A.R. Perry, Dept. of Botany, National Museum of Wales, Cardiff, CF1 3NP, U.K.

April 5-12. BBS Spring field meeting, Salisbury. Local Sec.: Mrs. V. Williams, Two Bridges, Lyburn Road, Hamptworth, Salisbury, Wilts., SP5 2DB. U.K.

July 26-2 Aug. BBS Summer field meeting, Aberystwyth. Local Sec.: Mr. A. Orange, Dept. of Botany, National Museum of Wales, Cathays Park, Cardiff, CF1 3NP, U.K.

July 30-3 Aug. IAB conference on Tropical Bryology, Missouri Botanical Garden. See Bryol. Times 48: 5, 1988.

Aug. 4-6. BSJ. 18th Annual Meeting, Shuho-cho, Yamaguchi Prefecture, with lectures and field study. Further information from Mr. T. Shiomi, 8-17, Itoyone 1-chome, Yamaguchi-chi 753, Japan.

Aug. 6-10. ABLS Annual Meeting at University of Toronto, Canada, jointly with the Bryological Section of the Bot. Soc. of America during the AIBS Meeting. For info. on the scientific programme contact Dale H. Vitt, Dept. of Botany, Univ. of Alberta, Edmonton, Alberta T6G 2E9 , Canada and for info on the field trip contact John Krug, Dept. of Botany, Univ. of Toronto, Toronto, Ontario M5S 1A1, Canada .

Sept. 22-24. BBS A.G.M. and paper-reading meeting, Lincolnshire. Local Sec.: Dr. M.R.D. Seaward, Post-graduate School of Studies in Environmental Science, The University, Bradford, BD7 1DP, U.K.

Nov. BBS Bryophyte Workshop for beginners, London. Further info. from Dr. P.J. Lightowlers, British Antarctic Survey, Madingley Rd., Cambridge, CB3 0ET, U.K.

1990

July 1-7. IV International Congress on Systematic and Evolutionary Biology. University of Maryland, College Park, Maryland, U.S.A.

Aug. 12-18. Helsinki, Symposium on SE Asian Bryophytes. See preliminary announcement in Bryol. Times 41: 4.

Tropical Bryology

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probably the best way to accelerate the teaching and training of new bryologists.

Many members of IAB have expresed their willingness to assist tropical bryologists with identifications or other information about bryophytes. In fact many have already contributed to produce complimentary reprint volumes for tropical herbaria.

For the Neotropics the following may be contacted: F.D. Bowers (Stevens Point), W.R. Buck (New York), M.R. Crosby (St. Louis), J. Florschütz-de Waard (Utrecht), J.-P. Frahm (Duisburg), S. Fransén (Götenberg), P. Geissler (Genève), S.R. Gradstein (Utrecht), N. Nishimura (Okayama), T. Pócs (Morogoro), R.A. Pursell (State University of Pennsylvania), W.D. Reese (Lafayette), G. van Reenen (Utrecht), A.J. Sharp (Knoxville), W.C. Steere (New York), B.M. Thiers (New York) and R.H. Zander (Buffalo). Several of these bryologists are also associated with taxonomic studies on a world-wide scale.

It is reassuring that there are individuals who can provide other types of expertise. Thus S.W. Greene (Bilthoven) has offered to help by making available references on bryologists and bryophytes in

tropical areas, S.L. Jury (Reading) by co-ordinating exchange of specimens with RNG, and B.J. O'Shea (London) by advising on data processing.

Resident bryologists from various tropical and subtropical areas supplement the previous listings: J. Aguirre (Bogotá), C. Arrocha (Panama), E.O. Campbell (Palmerston North), C. Delgadillo (México D.F.), E. de Luna (Xalapa), G. Hässel de Menéndez (Buenos Aires), R.D. Seppelt (Hobart), D.R. Smith (Guam), H. Sreimann (Canberra), and D.M. Vital (São Paulo).

The provision of identifications and the exchange of specimens and publications may be important to promote co-operation with tropical bryologists, but joint research projects and student training programs are probably the most valuable way of achieving the same purpose. The latter have a long tradition in temperate countries and should be useful models on which to establish those required for tropical areas.

Departmento de Botánica, Instituto de Biologiá, UNAM, Apartado Postal 70-233, Cd. Universitaria, Del. Coyoacán, 04510 México D.F., México.

Letter to the Editor

Dear Sir,

Have bryophytes a life strategy?

The term life strategy seems to be well established in botanical terminology and has been applied successfully to bryophytes by H. During. The term seems to me, however, not to be appropriate.

Strategy is a term of active behaviour: it is its use I wish to discuss not the subject to which it refers. It implies that this behaviour can be adapted actively to changing conditions by flexible response, which requires intelligence as in business or war games. All this cannot be applied to plants!

The so called life strategy of plants is a programme by which plant responses are fixed. Alterations to this programme can be developed only in the course of evolution. A flexible ad hoc alteration to presently changing conditions is not possible. Plants either succeed with their special strategy or die if they cannot react. They are programmed by a genetically fixed special life cycle which is itself a result of an evolution of growth form and anatomical structure.

I confess that the term life cycle is generally used for the alternation between sporophytic and gametophic generations. But it does not seem to be to be adequate to apply an expression of human terminology to plants. Are there other viewpoints?

Universität Gesamthochschule Duisburg, Postfach 10 16 29, D 4100 Duisburg, B.R.D.

Personalia

Dr. R. R. Ireland has a new address, which is: Botany Division, National Museum of Natural Sciences, P.O. Box 3443, Station D, Ottawa, Ontario K1P 6P4, Canada.

Dr. Jan-Peter Frahm will be on sabbatical leave from 1 April to 31 August, 1989. During this time his address will be Department of Botany, University of Alberta, Edmonton, Alberta, T6G 2E9, Canada. While away programs from the IAB software library can be ordered from B. O'Shea, 131 Norwood Road, London SE24 9AF, U.K.

Dr. Ronald A. Pursell's new address is: Department of Biology, 208 Mueller Laboratory, The Pennsylvania State University, University Park, Pennsylvania 16802, U.S.A.

Helen P. Ramsay has retired from her position at the University of New South Wales at the beginning of September, 1988. Her research will continue in Sydney, as well as her studies on the bryophyte collections at the national Herbarium of New South Wales as an Honorary Research Associate. Her new address is School of Biological Sciences, Macquarie University N.S.W. 2109, Australia.

OTHER ADDRESS CHANGES

Clyde F. Reed, Reed Library & Herbarium, 1222 Main Street, Darlington, Maryland 21034, U.S.A.

Lars Hedenäs, Nyängsvägen 19, nb, S-146 00 Tullinge, Sweden.

Geert Raeymaekers, Kroonlaan 272, 1050 Brussels, Belgium.

Annemarie Schaepe, Stresemannstrasse, D-1000 Berlin 61, Germany, B.R.D.

BRYOPHYTE CONTRIBUTIONS TO FLORA NEOTROPICA:

A 1989 PROGRESS REPORT

by S.R. Gradstein

The organization for FLORA NEOTROPICA (OFN) is a non-profit organization set up by the Commission of UNESCO in 1964 to publish a complete flora of the tropical American region, i.e. of the area bounded to the north by the Tropic of Cancer and to the south by the Tropic of Capricorn. It fosters the use of the services and skills of specialized botanists and the co-operation of botanical institutions throughout the world. About 50 volumes have now been published, most of them on angiosperms; many more are in preparation. Contributions are prepared according to a detailed set of guidelines, which can be obtained from the Managing Editor, Dr. Maria Lebrón-Luteyn, The New York Botanical Garden, Bronx, N.Y. 10458-5126, U.S.A.,;from the Deputy Director of Cryptogams, Dr. S. Rob Gradstein, (see address below); or from the office of the Executive Director, Dr. Scott Mori, The New York Botanical Garden (address above).

No bryophyte treatments have yet been published, but three monographs were completed in 1988 and a considerable number are in preparation. The following are ready for publication: W.R. Buck & R.R. Ireland - Plagiotheciaceae (6 spp.); J.-P. Frahm - Dicranaceae subfam. Campylopodioideae s.l. (65 spp.); and I. Sastre-de Jesús - Neckeraceae (10 spp.)

The list of bryophyte monographs currently in preparation for FLORA NEOTROPICA is as follows (species numbers given are approximations):

Mosses

Bartramiaceae (25 spp.).....D. Griffin

Brachytheciaceae

Brachythecium (30 spp.) .....K. McFarland

Calymperaceae (60 spp.) .....W.D. Reese

Dicranaceae

Campylopodioideae s. l. (65 spp.)

(submitted for publication) .....J.-P. Frahm

Leucoloma (5 spp.) .....C. Lafarge-England

Fissidentaceae (150 spp.) .....R. Pursell

Hookeriaceae

Lepidopilum (45 spp.) .....S.P. Churchill

Various small genera .....B. Allen

Hypnaceae (50 spp.) .....

.....H. Ando and N. Nishimura

Leucobryaceae

Leucobryum (10 spp.).....Z. Iwatsuki et al.

Leucophanes (1 sp.) .....N. Salazar

Octoblepharum (10 spp.) .....N. Salazar

Neckeraceae (10 spp.) (submitted for publication) .....I. Sastre-de

Orthotrichaceae

Macromitrioideae (75 spp.).....D.H. Vitt

Orthotrichoideae (50 spp.) .....J. Lewinsky

Plagiotheciaceae (6 spp.) (accepted for publication).....W.R. Buck & R.R. Ireland

Rhizogoniaceae (10 spp.).....
.....S.P. Churchill & C. Matteri
Seligeriaceae (3 spp.) .....D.H. Vitt
Sphagnaceae .....H. Crum
Splachnaceae (15 spp.).....A. Koponen
Thamnobryaceae (15 spp.)
.....I. Sastre-de Jesús

HEPATICAE

Aytoniaceae (10 spp.).....
.....H. Bischler & G.G. Hässel de Menédez
Cephaloziaceae (20 spp.).....J. Váña
Gymnomitriaceae (15 spp.) .....J. Váña
Jungermanniaceae (30 spp.) .....J. Váña
Lejeuneaceae
Aphanolejeunea (10 spp.) .....T. Pócs
Lejeuneoideae (250 spp.).....
.....B. Thiers, R. Grolle & S.R.
Ptychanthoideae (60 spp.)....S.R. Gradstein
Marchantiaceae (10 spp.).....H. Bischler
Plagiochilaceae (200 spp.).....I. Inoue

Radulaceae (75 spp.) .....K. Yamada
Ricciaceae ..... Jovet-Ast

Colleagues wishing to contribute a monograph on neotropical bryophytes to the FLORA NEOTROPICA should write to the undersigned.

S. Rob Gradstein, Deputy Director OFN, Institute of Systematic Botany, Heidelberglaan 2, 3508 TC Utrecht, The Netherlands.

NEW IAB MEMBERS

SI He, Department of Biological Sciences, University of Cincinnati, Cincinnati, Ohio 45221-0006, U.S.A.

Henk Creven, Koninginneweg 2, 3941 DP Doorn, The Netherlands.

Gerhard Ludwig, Amsterdamer Str. 11, D-5300 Bonn, Germany, B.R.D.

Terry McIntosh, 193 Mary Street, Waterloo, Ontario N2J 1S1, Canada.

Matthew Nash, Department of Botany, Morrill Science Center, University of Massacusetts, Amherst, Massachusetts, U.S.A.

Artemis Papert, 16 rue de Geneve, CH-1225 Geneva, Switzerland

Michael C. Proctor, Department of Biological Sciences, University of Exeter, Prince of Wales Road, Exeter EX4 4PS, United Kingdom.

D.D. Wani, Director, Academic Staff College, University of Poona, Pune - 411 007, India.

Zofia Wiewiorka, Michigan Technological University, Department of Biological Sciences, Houghton, Michigan, 49931, U.S.A.

CALL FOR 1989 DUES

With this issue we are distributing the 1989 dues notice. We are finding that some checks sent in payment of IAB dues are costing more than the value of the check for our bank to collect. Please send your dues payment by an International Money Order, Postal Money Order, Bank Draft drawn on a bank in Canada, or a personal check from a U.S. or Canadian bank. There is also the opportunity to send your payment in sterling (£) to Great Britain, in Francs (F fr.) to France, in Guilders (D.fl.) to the Netherlands or in Yen to Japan if it is better for you.

One further thing to remember--if you are an IAPT member you do **NOT** need to pay further IAB dues.

Please pay promptly to minimise administration.

Dale H. Vitt Secretary

Desiderata

Wanted: African Sematophyllaceae

Within the scope of BRYOLOGIA AFRICANA, Alain Empain is working on the African Sematophyllaceae; he requests anyone to submit types and specimens to him for study. Computerized illustrated descriptions are planned (for MS-DOS; presentation at the IAB Computer Workshop, February 1989) and will be free of charge to each contributor when enough material is at hand.

A.M. Empain, National Botanical Garden of Belgium, Domaine de Bouchout, B-1860, Belgium.

Index Muscorum

Special Offer Extended

Some sets remain in Utrecht unsold from IAPT's Special Offer (Bryol. Times, 44: 7, 1987). Thus some full 5 Vol. sets of Index Muscorum are still available at $120 US per set plus postage. The normal advertised price is $345 US per set, inclusive of postage.

Orders should be sent directly to IAPT, Institute of Systematic Botany, Heidelberglaan 2, 3585 CS Utrecht, The Netherlands.

This offer is unlikely to be repeated so order now.

Recent Publications

Bull. Brit Bryol. Soc., 52: 1-60, 1988.

Bull Bryol., XXVI Taxon, 37(4): 921-929, 1988.

Crypt. Bryol. Lichén., 9(4): 283-382, 1982.

Evansia, 5(2): 17-32, 1988.

J. Bryol., 15 (1): 1-256, 1988.

J. Hattori Bot. Lab., 65: 1-453, 1988.

Lindbergia, 14 (1): 1-72, 1988.

Proc. Bryol. Soc. Jap., 4(11): 173-190, 1988.

Taxon, 34(3): 513-804, 1988; 37(4): 805-1012, 1988.

MURRAY, B.M. 1987. 3. Andreaeobryaceae-Tetraphidaceae. In Mogensen, G.S. (ed.). Illustrated moss flora of Arctic North America and Greenland. Meddelelser om Grønland, Bioscience, 23: 1-36. 265 x 190 mm, soft covers. Available from Arnold Busck A/S, Købmagergade 49, DK-1150, Copenhagen K, Denmark. Export price, 50 Dkr. + postage.

This, the 3rd fascicule of IMFANAG, treats 13 species in 6 genera, in the same format used in the earlier parts (see review in Bryol. Times, 43: 12-13). The genera are *Andreaea*, *Andreaeobryum*, *Buxbaumia*, *Diphyscium*, *Tetraphis* and *Tetrodontium*. Keys are provided to genera and species as appropriate. The descriptions are concise and clearly laid out and are accompanied by details of types, habitats, notes on variability, details of selected specimens, and a summary of distribution. A three-quarter page illustration accompanies each description. Additionally a half page map, using dots and shaded areas gives a pictorial representation of distribution in North America and Greenland.

GLIME, Janice M. (ed.). Methods in Bryology Proceedings of Bryological Methods. Workshop Satellite Conference of the XIV International Botanical Congress under the auspices of the International Association of Bryologists 17-23 July, 1987, Mainz, Federal Republic of Germany. Published in Nichinan, by The Hattori Botanical Laboratory. 205 x 180 mm, 403 pp. Price Yen 5250 or $40 US including postage.

Containing 51 articles, the proceedings cover modern techniques of various fields of botany using bryophytes as materials in biochemistry, genetics, ecology, pollution, computer applications, microscopical methods, et al. This is a very useful book for botanists and students in all fields.

NEWS FROM THE EDITOR

Because there was no August issue of the Bryological Times, and as this number and No. 50 may be a little late in arriving to say nothing of answers to correspondence that has piled up on my desk in recent months, I thought I should offer a few words of explanation.

My overriding professional preoccupation since the beginning of last year has been the completion of Part 2 of the Conspectus of Bryological Taxonomic Literature against a Research Council Contract, a goal happily achieved. The 321 page camera-ready manuscript is now with the publisher and its appearance as a volume of Bryophytorum Bibliotheca is expected around the end of May this year. Thus the volume will appear about one year after Part 1 was advertised in Bryol. Times, 47: 10, 1988.

The second major preoccupation has been the running down of my research activities in Reading in preparation for a three year Departure from England to live in The Netherlands. During this time I will continue with my research projects (although necessarily at a slower rate). I will also continue as Editor of this Newsletter and carry on my other duties on behalf of IAB as an U.K. representative, since my residence abroad is only temporary. My address will be: Palestrinalaan 12, 3723 KN Bilthoven, The Netherlands, Tel (030-) 284218. This is where all correspondence, both professional and private should be sent from 1 Jan., 1989 onwards. Correspondence in the post to me at Reading will be redirected by the University and so everything should reach me safely. So please continue writing as normal. It will take a little time to reactivate my projects and get everything running smoothly again. Anyone who is patiently awaiting a reply can rest assured that one will come albeit tardily. At the moment it is not possible to offer fax or telex facilities for urgent communications, but if arrangements can be made to use such services, an announcement will appear in these columns.

I would like to take this opportunity of expressing publically my sincere appreciation to Mrs. Evelyn Williams for her efforts on behalf of IAB and the Bryological Times. (In particular she helped take us into the computer age with the help of our Apple Macintosh). Without her patience, conscientiousness and persistence much less would have been achieved. I feel sure bryologists the world over will join with me in thanking her for her efforts and wishing her every success in her future endeavors.

Finally may I wish all readers every success in 1989.

Stanley W. Greene Bilthoven, January 1989

POSTDOCTORAL RESEARCH POSITION--WETLAND PALEOECOLOGY-BRYOLOGY

Studies will include determination of vegetation changes, peat accumulation rates and present day ecosystem dynamics of peatlands of the boreal forest of western Canada. Candidates should have working expertise in identification of bryophytes and terrestrial macrofossils. Work will be performed at the University of Alberta starting April 1, 1989 for one year (2nd year possible). Salary $22,800 Cdn. per year. Send Curriculum Vitae and three letters of reference to Dr. Dale H. Vitt, Department of Botany, University of Alberta, Edmonton, Alberta, T6G 2E9, Canada.

THE INTERNATIONAL ASSOCIATION OF BRYOLOGISTS publishes The Bryological Times every three months, the Bulletin of Bryology twice a year, and the Advances in Bryology irregularly. Material for The Bryological Times can be sent at any time, but submission dates for the Bulletin and the Advances should be discussed with the Editors, Dr. Diana G. Horton (University of Iowa) U.S.A. and Dr. Norton G. Miller (Albany) U.S.A. respectively. The Editors do not accept responsibility for the views of the authors. For details regarding membership of the International Association of Bryologists (currently U.S. $8.00 p.a.), write to the Honorary Secretary, Dr. Dale H. Vitt, Department of Botany, University of Alberta, Edmonton, Alberta, T6G 2E9 Canada.

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