

ISSN 0253-4738

# The BRYOLOGICAL TIMES

Newsletter of the International Association of Bryologists

February, 1990

No. 53

## The Bryological Exploration of Bolivia – Past and Present

by  
Marko Lewis

A contribution to the Floristics and Phytogeography Column  
edited by W.R. Buck and J. Váňa

Bolivia has a reputation of being a 'relatively well known' area bryologically (Griffin & Gradstein, 1982). Its location as a central meeting point of nearly all of South America's major vegetation zones, along with a full range of altitudes and humidity regimes, combine to give Bolivia one of the most diverse floras in the world. This fact is underlined by Bolivia having well over 1200 species (436 more than listed for Colombia) of mosses known from within its borders (Hermann, 1976; Lewis, un-

publ.). Nevertheless, until recently most of Bolivia remained completely uncollected for bryophytes. Before 1979 16 collectors had gathered specimens from Bolivia, only two of whom were bryologists. The more important of these explorations are discussed below and a map is presented showing the areas collected from by them (Fig. 1).

Alcide Charles Victor Marie d'Orbigny was the first explorer known to have collected from Bolivia. His expedition of 1830-1833 passed through Bolivia, and *Tortula andicola*, *Bartramia potosica* and *Fabronia nivalis* Mont. (= *F. wrightii* Sull., *vide* Buck, 1983) are among the well known Neotropical mosses collected by him (Montagne, 1839).

Gilbert Mandon, a mining engineer (Weddell, 1867), was the next person to collect mosses in Bolivia. He spent many years in Bolivia and collected bryophytes from the Sorata area (ca. 100 km N of La Paz) between 1856 and 1860. These collections languished in the Schimper herbarium (Britton, 1896) until about 1895. In the meantime Lorentz, an Argentinian school-teacher and plant collector, visited southern Bolivia in 1873 and apparently made two moss collections, one of which is the type of *Sematophyllum brachyacrum* (C. Müll.) Broth. Also during the period

Hiroshi Inoue  
(1932 – 1989)



Bryologists throughout the world will have been sorry to learn of the death of the eminent hepaticologist Dr. Hiroshi Inoue, on the 29th of December 1989 at the age of 57 years. He obtained his doctor's degree in Tokyo in 1961 and was subsequently associated with the Botany Department of the National Science Museum, Tokyo until his death, first as a curator, and from 1983 as Director. Hiroshi Inoue was a highly productive scientist – his list of publications includes over 350 titles – and he was the world authority on the Plagiochilaceae. His publications on this notoriously difficult liverwort family include treatments for South-east Asia and

*continued on p. 5*

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between 1860 and 1895 collections were made by H.H. Rusby during his expedition of 1885-1886 to the Yungas of La Paz between Undavi and Coroico (see MacCreagh, 1926 for an account of this expedition), by Filiberto Germain in the Dept. Cochabamba in 1889 (Porter, 1910), and by Pierre Jay near Sorata and/or La Paz around 1893. While the collections of Jay have yet to be reported upon, those of Mandon, Lorentz, Germain, Rusby, and a few of d'Orbigny's that were apparently lying around, were reported on by Britton (1896) and Müller (1897). Thus, by the turn of the twentieth century, the moss flora of Bolivia was known from ca. 300-400 specimens made by non-bryologists from scattered localities and often without any indication of locality whatsoever (see Müller, 1897). [Jim Solomon informs me that there are some unreported moss collections from Bolivia by Banker at NY.]

During the first two decades of the present century major work in Bolivian bryology was accomplished by two renowned bryologists, R.S. Williams and Theodor Herzog. Williams, who earlier had joined the gold rush to the Yukon Territory (Steere, 1945) came to Bolivia in August 1901 with the John Evans expedition. I have followed some of the easier parts of his route on foot and by canoe, and found it, even in 1982-1983, exceedingly difficult. He collected in La Paz city in early August, finding the type of *Funaria macrospora*, before leaving to the ever-popular Sorata area where he arrived in mid August. From Sorata he climbed the high Cordillera near Luipichi Pass before descending to the cloud forests near Tacacoma in late September, down various arid to super-humid Andean valleys on the east slope to Mapiri where, in late September, the expedition was able to acquire rafts to float down the Mapiri and Beni Rivers to San Buena Ventura where they arrived in early

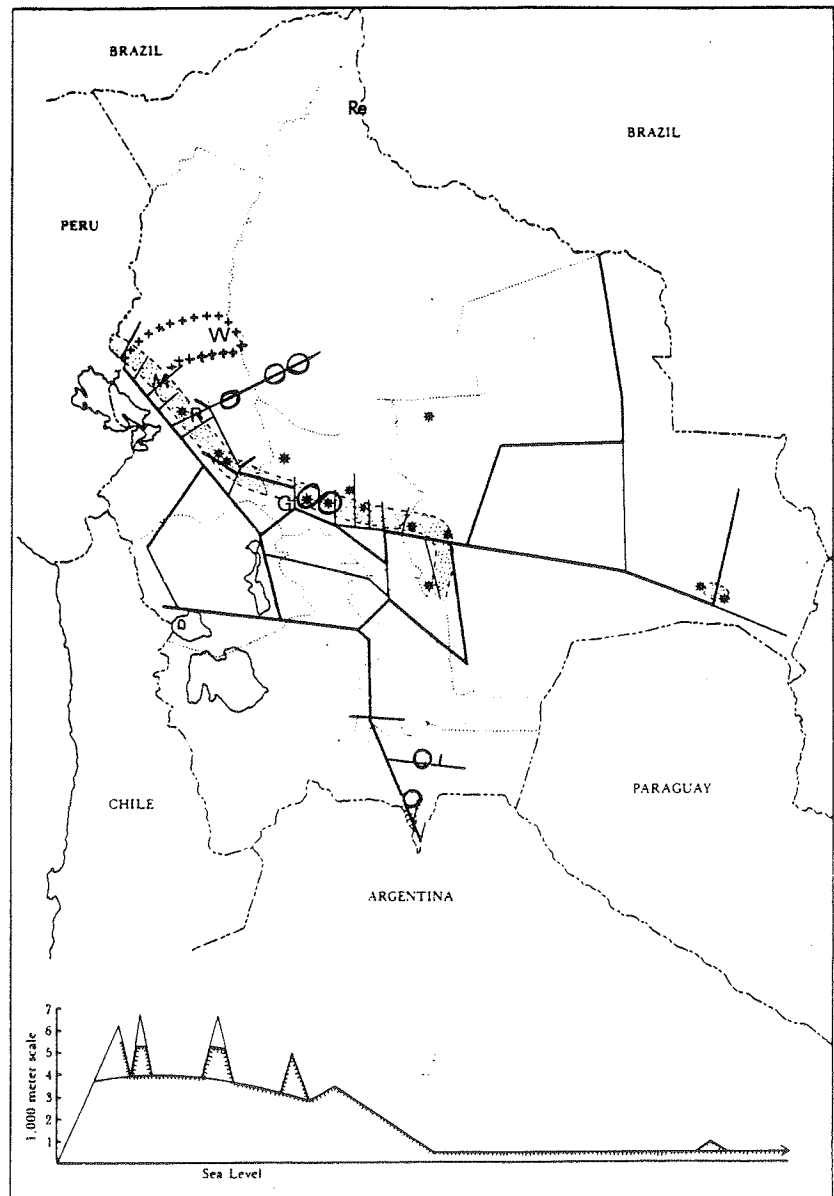


Figure 1. Areas collected for bryophytes in Bolivia.

lines: areas collected by M. Lewis (1979, 1982-present); +: route followed by R.S. Williams (1901-1902); o: S.R. Gradstein (1989); \*: major localities of T. Herzog (1907-1908 and 1910-1911); stippled area: region bryologically "well-known" prior to 1979; G: F. Germain (1889); J: P. Jay (1893); M: M.G. Mandon (1856-1860); R: H.H. Rusby (1885-1886); Re: W.D. Reese (1979).

November, 1901. From San Buena Ventura, the expedition traversed, apparently on foot, through the lowland forests some 120 km to Ixiamis, and then backtracked another 150 km to Apolo where the expedition arrived in February, 1902. Apolo is in an area of grasslands and quite poor in mosses, but Williams stayed

with the expedition until they left Apolo. Arriving in La Paz in late May, Williams decided to return to Apolo, and by following the Sorata-Consata-Mapiri trail, arrived in Mapiri by June 15, and then cut directly across the jungle covered low ridges at the foot of the Andes to Apolo in 5 days! For all that he was only able to

discover four new species in Apolo, *Macromitrium subdiscretum*, *M. atroviride*, *Pohlia apolensis* and *Sematophyllum longisetum* (still known only from the types). Williams finally left Bolivia in September, 1902, having spent just over a year in the country. The approximately 700 moss collections from his expedition were reported on by Williams (1903, 1910).

Theodor Herzog, who was a professor of pharmacognosy at the University of Jena, (GDR) until 1948 (Grolle, 1987), made two major expeditions to Bolivia: the first in 1907-1908, and the second in 1910-1911. It is the work from these expeditions which gave Bolivia the undeserved reputation of being well known bryologically. The route of the 1907-1908 expedition is a little hard to trace from the moss publications (Herzog, 1910a, 1910b). Apparently he arrived in Bolivia in May, 1907, and first collected the Chiquitos ranges near Santiago and San José de Chiquitos. These are isolated sandstone outcrops near the Brazilian border about 400 km to the east of Santa Cruz de la Sierra. He then headed north-west to the area around the misiones de Guarayos in the south-east corner of Beni and de Rio Blanco. This is an area of dense forests and inundated savannahs that even today remains difficult of access. By October, 1907, he had arrived at Cerro Amboró, about 50 km W of Santa Cruz, and collected a wide range of altitudes in the lower part of the Cordillera de Santa Cruz. His movements, bryologically, are mysterious for the later part of October and November of 1907. In any event, he made moss collections at Mapiri, a hot dry forested area at ca. 900 m, in the super-humid ceja de montaña habitat near Unduavi and, passing through La Paz, at Huayllas and Totorá, along the road between Oruro and Cochabamba. In January, 1908, Herzog collected in exceedingly rich Cordillera de Tunari. From

the summit of Tunari there is a beautiful vista of the entire Cochabamba valley, and from near the summit he collected the, in my opinion, good endemic *Schistidium tunariensis*. He also visited the very rich cloud forest around Incacorral in the upper Chaparé region, about 60 km NE from Cochabamba. Just before leaving Bolivia, in March, 1908, he climbed the escarpments of Chacaltaya ('Cacaltaya' on his labels, an area now known as the 'highest ski run in the world', near La Paz), and collected many new species.

The Herzog expedition of 1910-1911 is well mapped in several publications (Herzog, 1916, 1920, 1923). In short, he travelled extensively on the eastern slope of the Andes between Santa Cruz and La Paz, and collected specimens from a wide range of altitudes and habitats. Approximately 2600 bryophyte collections were made during his two expeditions.

Between 1911 and 1979 very little exploratory work was done in Bolivia. Minor collections were made by C. Troll (Herzog, 1934), P.F. Jaffuel (Thériot, 1929), F.J. Hermann (mostly unpublished), E. Hegewald (unpublished?) and W.D. Reese (1979). J.D.L. Meenks, a graduate student from Utrecht, collected Aneuraceae in Bolivia in 1982 for cytological and taxonomic purposes (e.g. Meenks, 1987). Furthermore, unpublished collections were made during the late 80s by S. Beck and M. Liebermann (LPB).

Until 1979, Bolivia with an area 3/5 as large as that of Mexico, was known only from about 4400 moss specimens. A glance at Fig. 1 will show that these collections were concentrated along the eastern Andean slope between the Peruvian border and Santa Cruz, and that more than 80% of Bolivian territory remained uncollected for bryophytes. The southern Sierra between Argentina and Santa Cruz, the Altiplano,

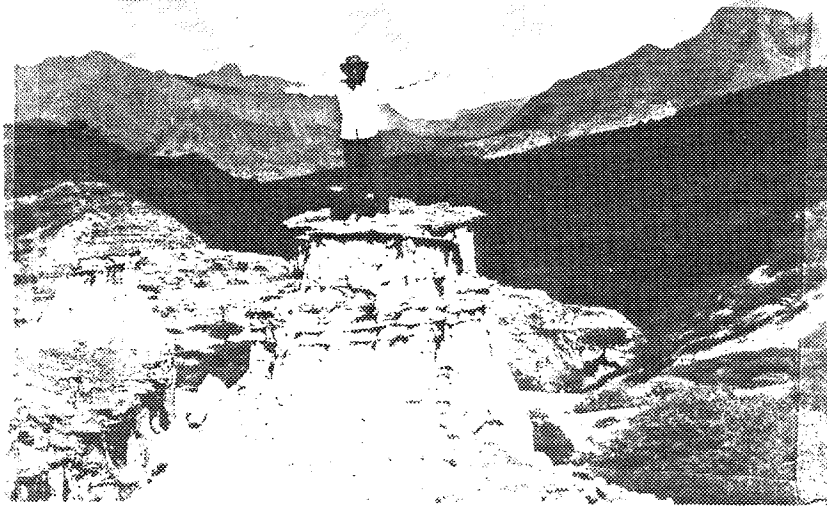
the 'Ring of Fire' volcanoes along the Chilean border, the Beni-Pando lowlands, and the dry inter-andean valleys east of the main cordillera remained virtually unknown. For this reason, the Field Museum of Natural History, with John Engel as Principal Investigator, organised the "Bryological Exploration of Bolivia" project in 1978 carried out by the author. This project is described in some detail in the next chapter.

S. Rob Gradstein has been the first professional hepaticologist to collect in Bolivia. Main purpose of his trip was to gather southern records of various Lejeuneaceae for his Flora Neotropica treatment. During 24 October - 21 November 1989 he collected, together with his wife Claritza, in three different main areas: 1] the Sierra de Pilon Lagas (Dept. Beni), 2] the Chapare region between Cochabamba and Villa Tunari (classic Herzog localities), and 3] moist forests in the Tarija region in the South, near the Argentinian border. The Chapare and Tarija trips were made together with the author, the Pilon Lagas trip together with Dr David Smith of the Missouri Botanical Garden. In total the Gradsteins made 660 collections, about half of them Lejeuneaceae. The specimens are in U, with duplicates in LPB. Gradstein and Lewis also gathered a considerable amount of material for the Bryophyta Neotropica Exsiccata (Gradstein, 1989), which is increasingly focusing on the Bolivian bryophyte flora.

#### The "Bryological Exploration of Bolivia" Project

The well-known massive destruction of neotropical flora and fauna during the second half of the twentieth century has given an urgency to both conservation projects and collecting programs.

The "Bryological Exploration of Bolivia" project was designed to carry out a major collecting program and help develop a science infra-



The author in a semi-arid habitat at ca. 2500 m altitude, near Padcaya in the southern Andes of Bolivia (photo S.R. Gradstein).

structure within Bolivia to enhance conservation. Since 1982, an extensive bryofloristic exploration, covering nearly all of Bolivia's life zones and habitats, has been carried out by the author. The field work has been sponsored by the Field Museum of Natural History between 1982 and 1986, by a grant to John Engel by the National Geographic Society for two years, and by the Missouri Botanical Garden during 1987-1988. Work has been in conjunction with the Academia Nacional de Bolivia, the Instituto de Ecología of the National University (UMSA), and especially with the Herbario Nacional de Bolivia (LPB).

Some 25,000 bryophyte collections have now been made, each with an average of 6 duplicates (see "On the Marko Lewis collections from Bolivia": this issue, p. 12). A great many transects have been made (see Fig. 1) from high altitudes to Andean foothills, including two giant transects between Chile and the Brazilian border. There are now sufficient collections to begin a "Moss Flora of Bolivia" and to fill in large gaps in our knowledge of hepatics.

As stated above, an integral part of this project has been to help form

a science infrastructure within Bolivia. The collections at LPB (ca. 23,000 specimens), along with exchange material, form a major reference collection of bryophytes for Bolivia, and have been used by a number of Bolivian students.

In July, 1989, bryology was included in the Ecology and Conservation workshop organised by the Instituto de Ecología (La Paz) in conjunction with the Smithsonian Institute. Twenty students joined in excursions and lectures with the author, and three went on to complete a study of the micro-habitat preference of epiphytic mosses near the Estacion Biologica del Beni, which will be published in "Ecología en Bolivia".

The moss flora of Bolivia is exceedingly complex (Lewis, 1983). Similar habitats are often isolated from one another by geographic barriers. The result has been a great deal of 'microspeciation' within separated populations, as indicated by the endemic elements in the Cord. de Quimsa Cruz (Herzog, 1916, Lewis, in prep.) and the adjacent Cordillera de Tunari. Complicating the matter further are confusing altitudinal and humidity-temperature related variations within species, with resulting

suppression and desuppression of morphological features (see e.g. Zander, 1985 for a discussion). This gives rise to 'insanity producing variations' such as those reported by Lewis (1981) for the *Polytrichum juniperinum* group.

Much exploration work remains to be done in Bolivia. Areas which have not been collected include the southern Altiplano, and the Amazonian lowlands of the Pando. Other undercollected areas include the low foothills of the Andes (which are most often arid and difficult of access, although the ridges can be quite humid), and the southern sierra between Villamontes and Valle-grande. It is hoped that some, or all, of this field work can be accomplished in the next five years. Disciplined ecological studies are needed, especially directed towards studying the actual role that mosses play in Andean ecosystems, and how the cutting of mossy forests in the mid and high Andes relate to flooding of the lowlands. There certainly seems to be work in Bolivia for many teams of bryologists until the projected near-extinction of natural habitats in this country towards the end of the present millennium.

#### Acknowledgements

I would like to thank John J. Engel and the Field Museum who have supported the project for many years, the National Geographic Society for providing funds for the field work, as well as the Missouri Botanical Garden. V.A. Funk and S. Mori's manuscript 'Bolivian Plant Collectors' was also of great use. Rob Gradstein and Jim Solomon read the manuscript and added their suggestions and knowledge of Bolivian collectors and areas.

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Marko Lewis  
Herbario Nacional de Bolivia  
Casilla 20127, La Paz, Bolivia

## New Products

### Walking on Mosses

According to the German magazine *Stern* (40/89), the shoe manufacturer Bama in Southern Germany produces insoles made from mosses. The company started manufacturing insoles and health shoes in Dresden in 1914. In 1950 the company moved to Mosbach in South-western Germany. There was not much commercial success for 70 years, and moss insoles were mostly purchased by elderly people. However, since the trend tends to natural clothing and natural footwear, the junior chief reorganized and modernized the company and adapted the business to the new 'eco-philosophy'. Today moss insoles are still being produced from moss gathered in Poland, hand-cleaned, pressed and sewn between textile. They absorb humidity and offer a comfortable, cool and soft feeling.

Jan-Peter Frahm

### Hiroshi Inoue, contd.

New Zealand (the latter with R.M. Schuster) and an unfinished revision of the neotropical species. In addition, Hiroshi wrote numerous research papers on Asiatic hepatics, and several popular books on cryptogams and the moss gardens of Japan. He was a very gifted and skilful illustrator and a selection of his liverwort drawings appeared in the two volumes — *Illustrations of Japanese Hepaticae*.

Hiroshi Inoue was also a talented organizer and for many years served the bryological community as a leader, both in Japan and abroad. He was secretary of the Japanese Bryological Society from 1972 and a founder, vice-president and, from 1981-87, president of the *International Association of Bryologists*. In the latter capacity he was largely responsible for the organization of the very successful World Conference of Bryology in Tokyo in 1983, which was attended by the largest number of bryologists ever assembled.

Hiroshi Inoue was an extrovert with a most charming personality. He enjoyed life and his role in it, had a marvellous sense of humour and was an excellent social companion, whether in the field, on a night-time stroll in Shinjuku, Tokyo, or elsewhere. He will be sadly missed by his many colleagues and friends.

S. Rob Gradstein

## Bryological Research in Sweden

by

Lars Hedenäs

After a period with very little bryological research in Sweden, there has been an increase in activities among researchers, postgraduate students and amateurs during the last decade.

In 1984, the Swedish Committee for the Conservation of Endangered Bryophytes was formed with the following members: Tomas Hallingbäck (chairman, Uppsala), Lena Gustafsson (secretary, Uppsala), Nils Cronberg (Lund), Lars Hedenäs (Stockholm) and Lars Söderström (Umeå). The committee revises and updates lists of threatened species and classifies them into Red Data categories. The committee also collects important information on the threatened species, initiates research and submits proposals for conservation measures to landowners and authorities. Until now the committee has compiled a preliminary list of endangered bryophytes and has produced data sheets on bryophytes which are endangered by the modern agricultural methods. The list of threatened bryophytes has recently been published (*Svensk Botanisk Tidskrift* 82: 423-445, 1988). The data sheets will appear in a manual of endangered plant species in the agricultural landscape edited by the Swedish University of Agricultural Sciences. The committee has revised a similar manual of endangered plant species of managed forests, which was first published in 1984.

A new project – "Atlas of Swedish Bryophytes" – has recently been initiated. The aim is to map the distribution of the Swedish bryophyte species. The project will advance in a rather slow pace; each participant

will map a few species annually. Biological variables such as life history, substrate and reproductive biology, will be registered, when appropriate. Participants are Nils Cronberg, Lena Gustafsson, Tomas Hallingbäck, Lars Hedenäs, Bengt Gunnar Jonsson and Lars Söderström.

A Swedish bryological society has evolved from a local organization in Gothenburg which started about fifteen years ago. Today this society has more than 120 members from all over the country, most of them amateurs. Excursions are organized in Gothenburg, Stockholm and Lund. In Gothenburg an investigation of the bryophyte flora of the surrounding provinces has been running since 1975. The society also publishes a bulletin, "Mossornas Vänner", twice a year (in Swedish or other Scandinavian language) with e.g. floristic articles, excursion reports and information about forthcoming events. The society has also produced a *Sphagnum* flora for the Nordic countries (in Swedish), of which the third edition will appear in 1989. The editor of the bulletin, Pär Johansson, will be glad to send information on request. Address: Birgittagatan 4 B, S-414 53 Gothenburg, Sweden.

Below, the projects of researchers and postgraduate students associated with the Swedish universities will be briefly presented. The scientific work performed covers many different fields of plant biology; taxonomy, genealogical studies, population ecology, community ecology, conservation biology, the impact of air pollution, etc.

### Nils Cronberg

Postgraduate student, University of Lund.

Address: University of Lund, Dept. of Systematic Botany, Östra Vallgatan 18-20, S-223 61 Lund.

Projects: [1] Genetical and morphological variation of peat mosses at the population level, especially within the *Sphagnum capillifolium*-group. The relations of genetic diversity (as measured by isozyme electrophoresis), breeding systems and habitat. [2] Reproduction and dispersal of *Marchantia polymorpha*. [3] Rare and threatened bryophytes, mainly in Southern Sweden.

### Thor-Björn Engelmark

Curator of the bryophyte herbarium, Swedish Museum of Natural History. Address: Swedish Museum of Natural History, Section for Cryptogamic Botany, P.O. Box 50007, S-104 05 Stockholm.

Project: Taxonomic studies within the Dicranaceae.

### Sven Fransén

Postgraduate student, University of Gothenburg.

Address: University of Gothenburg, Dept. of Systematic Botany, Carl Skottbergs gata 22, S-413 19 Gothenburg, Sweden

Projects: [1] Taxonomic revision of *Bartramia* sect. *Ithyphyllae* in the Neotropics. [2] *Bartramia* sect. *Bartramia* and sect. *Strictidium* from North America, southern South America and Europe. [3] Inventory of the bryophyte flora in the Gothenburg area. [4] Phenology of *Bartramia pomiformis*, *Diplophyllum*

*albicans*, *Nardia scalaris*, *Pellia epiphylla* and *Scapania nemorea*.

#### Lena Gustafsson

Plant ecologist, Swedish University of Agricultural Sciences.

Address: Swedish University of Agricultural Sciences, Dept. of Ecology and Environmental Research, P.O. Box 7072, S-750 07 Uppsala.

Projects: [1] Ecology and distribution of threatened Swedish bryophytes (*Campylopus atrovirens*, *Bryhnia novae-angliae*, *Hookeria lucens*, *Porella arboris-vitae*).

[2] Bryophyte flora and vegetation of managed and virgin coniferous forests in south-west Sweden (see: *Biol. Cons.* 44: 283–300).

#### Tomas Hallingbäck

Research engineer, Swedish University of Agricultural Sciences.

Address: Swedish University of Agricultural Sciences, Dept. of Ecology and Environmental Research, P.O. Box 7072, S-750 07 Uppsala.

Projects: [1] Effects of air pollution on bryophytes, lichens and blue-green algae and measures for conservation of bryophytes endangered by acidification, in particular woodland bryophytes. [2] The distribution of southern *Orthotrichum* species in Sweden (together with Gerhard Kristensson). [3] The taxonomy and distribution of *Neckera oligocarpa* (together with Fritz Eriksson).

Chairman of the national committee of endangered bryophytes and secretary of the national committee of endangered fungi.

#### Lars Hedenäs

Postgraduate student, Dept. of Botany, University of Stockholm.

Address: Swedish Museum of Natural History, Section for Cryptogamic Botany, P.O. Box 50007, S-104 05 Stockholm.

Projects: [1] Taxonomic studies within the *Calliargon-Scorpidium-Drepanocladus*-complex in Northern Europe. [2] Ecology of *Orthodon-*

*tium lineare* in Sweden (together with Lars Söderström, Håkan Rydin and Tomas Herben, Prag).

**Bengt Gunnar Jonsson:** postgraduate student, University of Umeå.

Address: University of Umeå, Dept. of Plant Ecology, S-901 87 Umeå.

Projects: [1] The effects of disturbances, primarily windthrows, on the forest floor bryophyte community in boreal forests. Of special interest are reproductive and dispersal strategies in relation to different disturbances. [2] The distribution and ecology of Splachnaceae in Sweden.

#### Elsa Nyholm

Retired, but still active at the Swedish Museum of Natural History.

Address: Swedish Museum of Natural History, Section for Cryptogamic Botany, P.O. Box 50007, S-104 05 Stockholm.

Project: "Illustrated flora of Nordic Mosses" – a revision of Illustrated Moss Flora of Fennoscandia. The first fascicle has already been published.

#### Håkan Rydin

Plant ecologist, University of Uppsala.

Address: University of Uppsala, Institute of Ecological Botany, P.O. Box 559, S-751 22 Uppsala.

Projects: [1] Experimental studies on competition and habitat separation in *Sphagnum* (see e.g. *Can. J. Bot.* 64: 1817–1824). [2] Transport of carbon- and phosphorus assimilates in *Sphagnum* (together with R. S. Clymo, University of London, UK). [3] Ecology of *Orthodontium lineare* in Sweden (together with Lars Hedenäs, Lars Söderström and Tomas Herben, Prag).

#### Erik Sjögren

Docent in Plant Ecology, Assistant professor, University of Uppsala.

Address: University of Uppsala, Institute of Ecological Botany, Villavägen 14, P.O. Box 559, S-751 22 Uppsala.

Projects: [1] Ecology and sociology of the Macaronesian moss vegetation (1965–). [2] Diversity and ecological specialization of epiphyllous hepatic communities in the Azores islands (1972–). [3] Dynamics of moss vegetation on strongly exposed deciduous trees on the island of Öland (1982–). [4] Dynamics of epiphytic and epilithic moss vegetation in two deciduous forests on Öland, particularly effects of acidification; first records in 1958–62, repeated recordings in 1988–. [5] Dynamics of the epigeic moss cover in permanent sample plots in different types of deciduous forests on Öland (plots established in 1956). [6] Dynamics of moss vegetation on the limestone alvar of Öland; in juniper shrubs (1986–) and on different types of frost-disturbed soils (1988–).

#### Lars Söderström

Plant ecologist, University of Umeå.

Address: University of Umeå, Dept. of Plant Ecology, S-901 87 Umeå, Sweden

Projects: [1] Ecology of bryophytes in Northern Sweden, primarily population dynamics and dispersal in patchy habitats. [2] Ecology of *Orthodontium lineare* in Sweden (together with Lars Hedenäs, Håkan Rydin and Tomas Herben, Prag).

University of Stockholm  
Swedish Museum of Natural History  
Section for Cryptogamic Botany  
P.O. Box 50007  
104 05 Stockholm, Sweden

### Dissertation

Jaakko Hyvönen obtained a Ph.D. from the University of Helsinki on November 25, 1989 by the public defense of his thesis entitled "A synopsis of the genus *Pogonatum* (Polytrichaceae, Musci)", which was published in *Acta Botanica Fennica* 138: 1–87.

## On Conserved Types

by  
Gea Zijlstra

A contribution to the Nomenclature Column, edited by G. Zijlstra

In Appendix IIIA ("Nomina generica conservanda et rejicienda") of the *Berlin Code* the "(typ. cons.)" at the end of the paragraph was deleted or newly added in a number of cases.

The cause of these changes lies in the definition of "typus conservandus" that had already been accepted in the *Sydney Code* (1983): "a name may be conserved with a different type from that designated by the author or determined by the application of the Code" (Art. 14.8). Before Sydney, there was no definition of conserved types. The "typ. cons." concept was rather wide and vague; many authors already used "typ. cons." in cases in which e.g. an author proposing a generic name for conservation, was the first who designated a lectotype. Since Sydney, this no longer constitutes "typ. cons.", this qualification only being applied if the proposing author overruled a holotype or an earlier lectotype.

In the *Sydney Code*, the typ. cons. definition did not lead to corrections in Appendix II yet. This is not surprising: it is only after checking the original proposal (and in many cases after checking more literature) that it can be established whether or not the "(typ. cons.)" should be retained. Instructions now ran so as to delete the "(typ. cons.)" in those cases which we were certain to be incorrect since Sydney. As in the Sydney-Berlin interval I had gathered some information on this subject already (e.g. on differences between ING and the Code, and on data sent by Isoviita. I decided to check all bryophyte entries. It appeared that "(typ. cons.)" could be deleted in most cases. On the other hand, there were a few

cases in which it had to be introduced. I made a list of these changes, along with the arguments. The list was circulated in the "Committee for Bryophyta". The comment it got was that the list should be published as a documentation of the changes. It follows below (with slight adaptations).

In order to keep the list as short as possible, I only mention the oldest designation in those cases in which the same species has been designated or mentioned as the type a couple of times.

['Year'] refers to the year in which the Code entry appeared with a type for the first time.

### I. Typ. cons. incorrect under Art. 14.\*, thus deleted. "References" is/are the (main) source(s) from which it is evident that there has not been an earlier lectotype.

- Aloina* [1956], D:177.  
*Anoetangium* [1956], G 1(3): 149, D: 177.  
*Atrichum* [1956], D: 178.  
*Aulacomnium* [1956], G 2(3): 149, D:178.  
*Barbula* [1952], B&M: 486, L 1943: 112.  
*Bartramia* [1952], G 2(3): 158; L 1941: 108-111, L 1943: 112-113.  
*Cynodontium* [1956], D: 178.  
*Gymnostomum* [1956], D: 178.  
*Gyroweisia* [1956], B: 439, D: 178.  
*Hedwigia* [1952], L 1943: 114-115.  
*Hypnum* [1956], Rev. Bryol. 4: 121-122, D: 178.  
*Leptostomum* [1956], see note 1, [1961] see note 2.  
*Meesia* [1952] G 2(3): 181, L 1943: 118-119.  
*Mniobryum* [1956], see note 3.

- Mnium* [1966], G 2(4): 243, Taxon 12: 201.  
*Pleurozium* [1983], Taxon 26: 596-597, see note 4.  
*Pterygoneurum* [1956], D: 178, see note 5.  
*Timmia* [1952], G 2(3): 146, L 1943:119.  
*Trichostomum* [1956], G 1(3): 161, D:178, see note 6.  
*Adelanthus* [1952], CRW: 42.  
*Diplophyllum* [1952], CRW: 42.  
*Gymnomitrium* [1952], CRW: 42.  
*Lepidozia* [1952], L 1949: 6-7.  
*Mylia* [1952], L 1949: 15, 18-19.  
*Nardia* [1952], L 1949:15, 19-20.  
*Pallavicinia* [1952], L 1949: 15, 20-21.  
*Pellia* [\*1983], thoroughly revised in 1988.  
*Plagiochasma* [1952], Bull. Torrey Bot. Club 42: 259, CRW: 42-43.  
*Radula* [1952], B: 461, CRW: 43  
*Riccardia* [1952], B: 454, [1949], L: 15, 21-22.  
*Trichocolea* [1952], L 1949: 10-11.

### II. Typ. cons. correct, thus retained. "Reference": the earlier, overruled lectotype.

- Holomitrium* [1961], *H. vaginatum*, see N. Am. Fl. 15: 105.  
*Leptodon* [1952], *L. trichomitrium*, see G 3(4): 220 and note 7.  
*Mittenothamnium* [1956], *M. loriforme*, see Nova Guinea 12: 123.  
*Neckera* [1956], *N. crispa*, see G 3(4): 208.

### III. Typ. cons. necessary, thus added. "References": (a) the earliest, overruled lectotype; (b) the conserved type.

- Ditrichum* [1956], (a) N. Am. Fl. 15:



62 (*D. pusillum*), (b) 178 (*D. homomallum*).  
*Tortula* [1952], (a) B: 440 (*T. muralis*), (b) L 1943: 120 (*T. subulata*).

#### Explanation of the abbreviations

B = N.L. Britton, *Fl. Bermuda*. 1918.  
 B&M = N.L. Britton & C.F. Millspaugh, *Bahama Fl.* 1920.  
 CRW = W.H. Camp, H.W. Rickett & C.A. Wetherby, Names proposed for conservation, in Proposed changes in the Int. Rules of Bot. Nomencl. *Brittonia* 7: 1-51. 1949 (using data from Evans, amongst others).  
 D = H.N. Dixon, Internat. bryol. nomencl. *J. Bot.* 77: 176-178. 1939.  
 G = A.J. Grout, *Moss Fl. N. Am.* 3 vols, 1931-1940. In a number of cases: in Grout.  
 L 1941 = E.L. Little, *Bartramia* Hedwig, nom. gen. cons. prop. *Bryologist* 44: 108-111.  
 L 1943 = E.L. Little, Later generic homonyms among North American mosses. *Bryologist* 46: 105-125.  
 L 1949 = E.L. Little, Nom. cons. prop. in Hepaticae. *Bryologist* 52: 1-22.

#### Notes

1. 1956 Code: *L. macrocarpum*. This species was not originally included, so we can disregard its designation by Dixon 1939.
2. 1961 Code: *L. inclinans*.
3. Not mentioned in Dixon 1939. The generic names appear for the first time in the (unofficial) 1947 Code (which is not referred to in the lists above). Even though I have not seen the proposal, nor know of an old lectotypification, I think it is rather sure there has not been another lectotype.
4. For *Pleurozium* Mitten, non (Sull.) Mitten, there has not been an earlier lectotypification.
5. Dixon 1939 dates from June; thus the designation of *P. subsessile* in Grout's Flora dating from July 1939 does not present a problem.
6. Britton 1918 designated *T. cylindricum*; this is not an original species.
7. Dixon designated *L. smithii* in Rev. Bryol. Lichenol. 7: 137-141.

## Water-soluble Permanent Mounting Medium for Microscopic Slides

by

Jan-Peter Frahm

A contribution to the Techniques Column  
 edited by M.L. Sargent

Water soluble mounting media are usually preferred for the preparation of permanent slides of bryophytes. The most commonly used mounting medium, especially in North America, is Hoyer's solution. It was originally developed by entomologists and introduced for bryology by Anderson (1954). It consists of a mixture of distilled water (50 ml), gum arabic (30 g), chloralhydrate (200 g) and glycerol (20 ml). There are, however, two disadvantages of this mounting medium: First, the microscopic specimens bleach (which helps to make structures of entomological subjects visible, but causes bryophyte specimens to lose their colour). And secondly, delicate cell walls tend to shrink and distort. To avoid these effects, Bowers (1964) reduced the effect of chloralhydrate drastically and recommended a mixture of 20 g gum arabic, 60 ml distilled water, 5 g chloralhydrate and 10 ml glycerol. Other authors avoided the use of chloralhydrate totally and recommended pure gum arabic based mounting media (Sayre, 1941, Frahm, 1981). A disadvantage of these media is that the slides need considerable time to harden and are best stored only in a flat position.

In Europe, glycerolgelatine has been used frequently for permanent slides of bryophytes. To avoid shrinking of structures, the specimen has to be transferred to a mixture of glycerol and water first. Small pieces of glycerolgelatine have to be carefully heated (to avoid boiling, which causes air bubbles) on a microscopic slide; the specimen is transferred into the liquid, is cov-

ered, and gets firm when it cools. Since glycerolgelatine is infected by microscopic fungi, the cover glass must be sealed with Caedax, if the slide must be stored for longer periods. Altogether this is a relatively time-consuming and circumstantial method. Similar but liquid mounting media such as gelatinol need not be heated but take longer time to harden.

In all cases, the specimen has to be transferred to the mounting medium. This is circumstantial, can be troublesome in the case when leaves are folding and can no longer be stretched, and is nearly impossible with small transverse sections of stems or leaves. I therefore tried to find an easier method. When introducing the gum arabic-based mounting medium (Frahm, 1981), I recommended to use a small plastic squeeze bottle ending in a fine tip. The microscopic slide is prepared as usual using water as imbedding medium. If this slide is to be made permanent, a stripe of the mounting medium is squeezed along one side of the cover glass. The water below the cover glass will evaporate automatically within the next hours to all other sides and the mounting medium will be soaked under the cover glass, replacing the water. In this way, the preparation of a permanent slide is possible at any time, without any special treatments, transferring of specimens, even of small transverse sections, within a few seconds. A matter of experience is to find the right amount of mounting medium to be squeezed along the cover glass. If it is too little, parts of the slide will

not be filled with mounting medium; if it is too much, the slide will take longer to harden.

For several years, a new liquid mounting medium called Polyvinyl-lactophenol has been available in Germany, which can be applied in the same quick way, but hardens within a few days and needs no special treatment as for instance sealing of the cover glass to make it air tight and protected against fungi. This mounting medium is similar to Hoyer's solution, but has none of its disadvantages. It is not so syrup-like and therefore can be simply added along the side of a cover glass. It also does not cause shrinking or bleaching of the specimen. In addition, it hardens permanently and does not become liquid again, even when heated up to 60°C. Thus it is also applicable under tropical climate conditions. It seems to be therefore the best available water-soluble mounting medium for bryophytes. Polyvinyl-lactophenol can be ordered at a price of approx. 5 US \$ per 50 ml from CHROMA Gesellschaft, Schmid GmbH & Co., Kferstr. 2, 7316 Köngen, F.R.Germany. In North America it is available from Atomergic Chemetals Corp., 222 Sherwood Ave., Farmingdale, N.Y., 11735, USA at a price of approx. 45 US \$ per 100 ml.

#### References

- ANDERSON, L.E. [1954]. Hoyer's solution as a rapid permanent mounting medium for bryophytes. *Bryologist* 57: 242-244.
- BOWERS, M.C. [1964]. A water-soluble, rapid, permanent mounting medium for bryophytes. *Bryologist* 67: 358-359.
- FRAHM, J.-P. [1981]. Ein praktisches Einschlußmittel für Mikropräparate von Moosen. *Herzogia* 5: 531-533.
- SAYRE, G. [1941]. A gum arabic mounting medium. *Bryologist* 44: 160.

## Progress on the European Bryological Bibliography

by

Brian O'Shea

The concept of a world-wide bryological bibliography was first raised as a practical proposition by Helène Bischler in the *Bryological Times* 26, 1984, and subsequently this was supported by the British Bryological Society (BBS) (O'Shea, *Bryol. Times* 29, 1984). The BBS then sought the support of the IAB, which was given at the IAB council meeting in August 1985 – although they thought it was too soon to propose computerization. The "American Bryological and Lichenological Society" (ABLS) set up a special sub-committee to review the topic, and during summer 1986 decided they could make more rapid progress on their own, and set up their own system at Missouri Botanical Garden managed by Marshall Crosby, and subsequently (from late 1988) Bob Magill. After some delay the concept of a European bibliography was initiated at a meeting in Edinburgh (July 1988) between representatives of *Cryptogamie* and *Journal of Bryology*. This was followed by the agreement of *Lindbergia* also to participate. As a result, a specification for a European Bryological Bibliography (EBB) is now being produced.

The proposed terms of reference (not yet agreed) are as follows:

1. To produce a bryological bibliography to replace those currently published in *Cryptogamie* and *Journal of Bryology*.
2. To combine the input from several different collectors of references into one bibliography.
3. To gather the data on computer to produce camera-ready copy for a twice-yearly supplement for the journals *Cryptogamie*, *Journal of Bryology* and *Lindbergia*.
4. To provide facilities to allow the data to be searched.
5. To store the data cumulatively, and to make this data available on diskette, for querying.
6. To design a system consistent with future extension to world-wide coverage.

The objective of EBB is thus to develop a system that will allow literature references to be collected from several sources for the purpose of printing a combined bibliography, with the further intention of using computers and to allow the accumulation of a database of bibliographical references. The references in each new list will also be distributed via computer diskette.

The expectation is that this will involve the design of a database together with public domain programmes with which to update and query it, as well as with a means of combining data from different contributors.

To limit dependence on current technology, it is hoped to use a reasonably 'future-proof' database, but also to ensure that the data is as independent as possible from the database, to allow the transfer to other programmes or other machines should this prove necessary. Such a strategy would allow a gradual transition to new technology, as well as the incorporation of disparate technologies into the one system. It would be useful in doing this to exploit any existing standards, and we are considering the use of XDF (Transfer Data Format) for bridging between different machines and software. XDF is currently used for a

similar purpose for the international legume database. We are currently looking in more detail at the requirements of the system.

#### References

- BISCHLER, H. [1984]. The utility of bibliographies. *Bryol. Times* 26: 3.  
O'SHEA, B.J. [1984]. The utility of bibliographies. *Bryol. Times* 29: 4.

131 Norwood Road  
London SE24 9AF  
England, UK

### Letter to the editor

Dear colleagues,

Romania is free! The few Romanian bryologists active today have been kept in a prison of darkness for a long time. Now the sun has arisen! The political revolution has brought us liberty, at the price of many sacrifices and material losses, including library materials. Therefore we ask you, dear foreign colleagues, to help us by sending books, papers and bryological journals either in exchange or as a gift. These data would be extremely useful to us, as with the exception of the journal *Lindbergia* and a few well-known bryophyte Floras - obtained thanks to the goodwill of some friends and colleagues from other countries - we virtually lack current sources of bryological information. More than ever we need your collegial help because our financial resources are non-existent.

Dr. G. Dihoru  
Institutul de Stiinte Biologice  
Splaiul Independentei 296  
77748 Bucuresti VI  
Romania

### Meetings

#### Bryology and Perestroika in Kirovsk

The 7th meeting of the Central and East European Bryological Working Group (CEBWG) will take place in Kirovsk (Kola peninsula), U.S.S.R. during 25-30 June 1990. Some 80 persons have already expressed their interest to attend.

The starting and end point of the meeting is in Leningrad, where participants should arrive on June 24 or 25. From Leningrad transportation to Kirovsk will be arranged by the organizers and may be by train (24 hours) or by air (3 hours). The registration fee is 740 US \$, which covers air or train ticket for travel from Leningrad to Kirovsk and back, accommodation in modest hotel (double room), meals, farewell party, field excursions and a copy of the Abstracts. Accompanying persons pay 590 US \$. Abstracts of the papers and posters, to be presented at the meeting, should reach the organizers by March 20, 1990 at the latest. The text of the abstract should be in English, on white paper and single spaced, the width being maximally 15 cm and the length not exceeding one page.

Please address all correspondence to: Dr. N. Konstantinova, Polar-alpine Botanical Garden of the Kola Science Center, Academy of Sciences of the USSR, 184230 Kirovsk 6, Murmansk region, USSR. Participants should preferably provide a telex number with their address.

The following Abstract is an example:

R.M. Marchantiev

Institute of Bryology of the Academy of Sciences of the USSR  
1 Mossy St., Liverwort city  
001990 USSR

BRYOLOGY AND PERESTROIKA  
Bryology and bryologists are the most important factors of perestroika.....etc.

### Collections

#### Duplicates of P.G. Lorentz Bryophyte Collections held at the National Herbarium of New South Wales (NSW)

by  
Helen P. Ramsay & Julie Seur

The bryophyte collections held at NSW include many exotic species, including types, sent on exchange to W.W. Watts in the early 1900's. It is not generally realized that such a source of really collections is available. On a recent visit to Sydney, Celina Matteri was amazed to find a large number of South American specimens of P.G. Lorentz in the collection here and in response to her suggestion a complete list of his specimens has been compiled.

Paul Gunther Lorentz (1835-1881) was a prominent German botanist who worked in Germany until 1869 when he took up a position as Professor of Botany at Cordoba, Argentina, until 1874. He later worked in Uruguay. His moss herbarium was purchased by and housed in the Botanical Museum (Carl Müller's herbarium) in Berlin. During the Second World War this Herbarium was largely destroyed and the originals of Lorentz' collections were lost.

Whilst it is known that duplicates are available at GNF, GOET, H, NY & W, the presence of any collections at NSW is not widely known. There are some 475 specimens collected by him at NSW, the bulk from Argentina, but about one third from Europe. Families represented include Amblystegiaceae, Andraeaceae, Bartramiaceae, Brachytheciaceae, Bryaceae, Catosciaceae, Climaciaceae, Calymperaceae, Daltoniaceae, Dicranaceae, Ditrichaceae, Disceliaceae, Entodontaceae, Fabroniaceae, Fissidentiaceae, Funariaceae, Grimmiaceae, Hedwigiaceae, Hynaceae, Hypoterygiaceae, Lembophyllaceae, Leskeaceae, Leucodontaceae, Meesi-

aceae, Meteoriaceae, Mniaceae, Myuriaceae, Neckeraceae, Orthotrichaceae, Plagiotheciaceae, Polytrichaceae, Pottiaceae, Pterobryaceae, Ptychomitriaceae, Racopilaceae, Rhabdoweisiaceae, Seligeriaceae, Sematophyllaceae, Sphagnaceae, Slachnaceae, Tetrarhizaceae, Timmiaceae, Thuidiaceae. In some families there are few genera represented, in others quite a number.

We thought this information could be of value to those with special interests in the collections of P.G. Lorentz and a copy of the complete list of taxa is available on request to Dr Helen Ramsay while loans can be arranged through The Director, National Herbarium of New South Wales, Royal Botanic Gardens, Sydney, 2000, N.S.W., Australia.

Dr. H.P. Ramsay  
School of Botany  
University of New South Wales  
Kensington 2033, NSW, Australia.

#### On the Marko Lewis collections from Bolivia

by  
Marko Lewis

During 1979, and from 1982 until the present, I have collected approximately 100,000 sheets of bryophytes, consisting of over 20,000 numbers from Bolivia. These have been and are being distributed to herbaria in various ways. The Herbario Nacional de Bolivia, La Paz (LPB), has a complete set, excepting 1979 collections made prior to the establishment of the herbarium. These specimens will be heavily relied upon for the proposed 'Moss Flora of Bolivia'.

The Field Museum (F) is distributing duplicates of all material collected up to 1986, and has a complete set of these numbers. The Missouri Botanical Garden (MO) is distributing duplicates of the 1987 moss collections. As from 1988 I have distribut-

ed material of mosses to Geneva, Berlin, Edinburgh, Ottawa, MO, and other herbaria. All hepatic collections from all years concerned are being processed at F. Specialists wishing to see and keep material of specific groups in return for determination may write to the Field Museum regarding the 1979, 1982-1986 material; to the Missouri Botanical Garden for 1987 material; to the Herbario Nacional de Bolivia for 1988-1989 material.

Marko Lewis  
Herbario Nacional de Bolivia  
Casilla 20127 La Paz, Bolivia

### Personalia

#### S.W. Greene (1928-1989) a note on his career

In my obituary of Stanley Wilson Greene (*Bryological Times* 51: 1) I mentioned that Stanley has been a curator at the British Museum (Natural History). As had been kindly pointed out by Dr. Alan Harrington, Stanley worked extensively in the Museum as a visitor but never occupied a staff position there. Stanley's career was summarized in the University of Reading Herbarium News 18 (August 1989) by Dr. Stephen Jury as follows:

- 1951-1955 Demonstrator in botany, University College of North Wales, Bangor
- 1955-1969 Lecturer/Senior Lecturer in cryptogamic botany, University of Birmingham
- 1969-1974 Head of the Botanical Section, British Antarctic Survey
- 1974-1981 Head of the Sub-division of Plant Biology, Institute of Terrestrial Ecology
- 1981-1987 Reader in botany, University of Reading

Rob Gradstein

**Risto Tuomikoski**, Professor Emeritus of Biological Taxonomy of the Helsinki University, born 24.1.1911 in Joensuu in Finland, died after a long illness on 24 September 1989, in Helsinki. Professor Tuomikoski had a good knowledge of the holarctic bryoflora and he published many papers e.g. on the family Amblystegiaceae. He did extensive fieldwork in Newfoundland (published) and in the James Bay and Hudson Bay areas (unpublished). He was a specialist on fungi as well, and a world authority on some groups of flies and on the generic classification of some mosquitoes. His scientific activity included the grammar of the Finnish language in which field he was, on one occasion, an opponent of a doctor's dissertation. Tuomikoski was the important link between the old Finnish S.O.Lindberg - V.F. Brotherus tradition and the present school of bryologists at Helsinki University all of whom are his students, or his students' students. Professor Tuomikoski was a Honorary Member of the Finnish Bryological Society.

Timo Koponen

**Philip Lightowers**, meetings secretary of the British Bryological Society, has left the Institute of Terrestrial Ecology and the British Antarctic Survey and now works as an Environmental Journalist in London. His new address is 38A Lockhurst St, London E5 OAP, England

**Dr. Benito Tan** has accepted a research position at the Farlow Herbarium of Harvard University starting January 1990, for a period of two years. He would like to request that correspondence and exchange materials be directed to his new address: Farlow Herbarium, 20 Divinity Ave., Cambridge, Mass. 02138, USA.

**Book Review**

Streimann, H. and J. Curnow. **Catalogue of mosses of Australia and its external territories.** 1989. viii+479 pp. Australia Government Publishing Service, Canberra. ISBN 0-644-50531-1. A \$ 55<sup>95</sup> (excl. mailing cost).

This new publication is a valuable research tool in the bibliography of Australian mosses. The book contains about 3,800 entries of moss taxa (including synonyms and nomina nuda) reported from continental Australia, Norfolk Island, Christmas Island, Cocos (Keeling) Island, Heard Island, and the Australian Antarctic Territories. All entries are arranged alphabetically within each geographic unit. Accepted names are profusely documented with primarily Australian information sources and local distribution notes as well. Synonyms are cross-referenced to accepted names, albeit without detailed information. Errors of reports in literature are clarified and corrected in many cases. The authors are to be congratulated on this comprehensive, well-prepared catalogue. As stated in the Foreword of the book by Professor W.B. Schofield, "the scientific community is greatly indebted to the authors that they have persisted to complete the catalogue".

Since many of the moss taxa listed in the catalogue are also found in adjacent regions and other Gondwanalandic continents and islands, the book should be useful as a source of nomenclatural information to many workers outside of Australia.

The book may be purchased through the Australian Government Printing Press, Mail Order Sales, GPO Box 84, Canberra, ACT 2601, Australia.

B.C. Tan  
Farlow Herbarium, Cambridge  
Massachusetts 02138, USA

**New Publications**

H. Bischler-Causse. **Marchantia L. The Asiatic and Oceanic taxa.** *Bryophyt. Biblioth.* 38: 317 pp., 89 figs.

This elaborative revision of Asiatic *Marchantia*, based upon study of about 4000 collections, recognizes 30 species (including 5 new ones) in 3 subgenera.

J.-P. Frahm (with collaboration of D. Lamy., R. Schumacker, G. Philippi, V. Raststetter, and J. Werner) - **La bryoflore des Vosges et des zones limitrophes,** 260 pp., Duisburg 1989.

A bryoflora of the Vosges-Mountains and surrounding areas (Upper Rhine valley, Sundgau), NE-France, including distribution maps for all 680 species recorded on the basis of grids for the topographical map 1: 25000. Available from the author (Universität Duisburg, Fachbereich 6, Botanik, Postfach 101503, 4100 Duisburg, FRGermany) at a price of DM 52 - (Approx. US \$ 25).

P. Geissler & H. Bischler (eds.). **Index Hepaticarum Vol. 11: Naidea to Pycoscenus.** Published for the International Association of Bryologists by Gebr. Borntraeger, Berlin-Stuttgart and the Conservatoire et Jardins Botaniques, Geneva, 353 pp., 1989.

This latest volume of the Index Hepaticarum, which contains contributions of thirteen specialists, provides a fully revised second edition of vol. 1, *Plagiochila*, by Dr H. Inoue and S. Willi.

S.R. Gradstein. **A key to the Hepaticae and Anthocerotae of Puerto Rico and the Virgin Islands.** Reprinted from the *Bryologist* 92: 329-348.

A key emphasizing vegetative characters is provided to 237 species in

92 genera of liverworts, including many common neotropical taxa. Reprints in green cover are available from the author (Heidelberglaan 2, Utrecht, 3584 CS, The Netherlands) at \$ 1<sup>50</sup> each.

A. Touw & W.V. Rubers. **De Nederlandse Bladmossen, flora en verspreidingsatlas van de Nederlandse Musci (Sphagnum uitgezonderd).** Published by the Royal Dutch Natural History (KNNV), 532 pp., 15 figs., numerous distr. maps, December 1989, ISBN 90-5011-027-4, hard cover, Price D.Fl. 99<sup>50</sup> excluding postage.

This is first complete Flora of the mosses (except *Sphagnum*) of the Netherlands, based on a revision of the holdings of the Dutch moss herbaria (about 65000 specimens). The work contains numerous keys to both sterile and fertile material, a fully illustrated glossary, descriptions, grid maps and extensive notes on the distribution, ecology and taxonomy of the about four hundred species recorded from the country. The text is in Dutch. Species illustrations are not provided but references are given to the figures in J. Landwehr's *Nieuwe Atlas Nederlandse Bladmossen* (Thieme & Cie, Zutphen, The Netherlands, 568 pp., 1984, price D.Fl. 57, excluding postage), which was prepared in close consultation with the authors of the Flora. Both works can be ordered from Bureau KNNV, Hoogenboomlaan 24, 1718 BJ Hoogwoud, The Netherlands.

W.R. Buck & R.R. Ireland. **Plagiogtheciaceae. Flora Neotropica Monograph 50: 22 pp., 9 figs., April 1989.** Published by the New York Botanical Garden, price US \$ 7.

This is the first bryophyte volume of the *Flora Neotropica*. The Plagiogtheciaceae are circumscribed as a monotypic family with the single genus *Plagiogthecium*. Six species are treated.

## Diary

For explanation of acronyms, see  
*The Bryological Times* 31: 7-8 [1985]

### 1990

#### April 4-11

BBS, spring field meeting, Lancaster. Loc. Sec.: Mr. Martin Wigginton, Nature Conservancy Council, 70 Castle-gate, Grantham, Lincolnshire, UK.

#### June 25-30

CEBWG meeting Kirovsk, USSR. See this issue, p. 11.

#### July 1-7

IV International congress of systematic and evolutionary biology. University of Maryland, College Park, Maryland, USA.

#### August

BBS, summer field meeting, Ulster: Antrim, Derry and Donegal. Loc. Sec.: Dr. Keith Lewis, Biomedical Library, Queens University, Belfast City Hospital, Lisburn Road, Belfast, BT9 7AB. *First few days in the Cushendall/Cushendun area in the heart of the glens; the remainder of the first week in Castlerock/Limavady in the County Derry. The second week in north Donegal, headquarters Donfan-aghy.*

#### August 12-19

Helsinki. Congress of East Asiatic bryology. See *Bryol. Times* 50: 5. Further information from Prof. T. Koponen, Department of Botany, University of Helsinki, Unioninkatu 44, SF-00170 Helsinki, Finland.

#### September

Annual general meeting and paper reading meeting, Cambridge. Loc. Sec.: Dr. Philip Stanley, 48 Glisson Road, Cambridge CB1 2HF. *Special meeting in honour of Professor Paul Richards and Dr Eustace Jones.*

#### September 24-28

Uppsala, Sweden. Symposium on endangered bryophytes in Europe. See *Bryol. Times* 50: 6. Further information from Tomas Hallingbäck, Swedish University of Agricultural Sciences, Dept. of Ecology, P.O. Box 7072, 750 07, Uppsala, Sweden

### 1991

#### July

Joint IAB-BBS Meeting, Exeter, England. International conference on experimental bryology and *Sphagnum* Biology. See *Bryol. Times* 51: 9.

## Colophon

*The Bryological Times*, founded in 1980 by Stanley Wilson Greene (1928-1989), is the bimonthly newsletter of the INTERNATIONAL ASSOCIATION OF BRYOLOGISTS. It is published in Edmonton (Canada) and distributed from Edmonton, St. Louis (USA), Beijing (China), Tokyo (Japan) and Eger (Hungary).

All items for publication in *The Bryological Times* are to be sent, preferably on diskette, to the editor, S. Rob Gradstein, Institute of Systematic Botany, Heidelberglaan 2, 3584 CS Utrecht, The Netherlands, except those for the regular columns, which should go direct to the column editors.

#### Editor

S.R. Gradstein

#### Assistant Editors

P.W.A. Greene

G.B.A. van Reenen

#### Column Editors

##### Computer Techniques

- J.-P. Frahm, Botanik, Universität Gesamthochschule Duisburg, Postfach 10 16 29, D-4100 Duisburg 1, BRD
- B. O'Shea, 131 Norwood Road, London SE24 9AF, England, UK

##### Techniques

- M.L. Sargent, Department of Genetics and Development, University of Illinois, Urbana, Illinois 61801, USA

##### Ecology

- J.M. Glime, Department of Biological Science, Michigan Technological University, Houghton, Michigan 49931, USA

##### Floristics and Phytogeography

- W.R. Buck, New York Botanical Garden, Bronx, New York, 10458-5126, USA
- J. Váňa, Katedra Botaniky, Přírodovědecké Fakulty, Univerzity Karlovy, 128 01 Praha 2, Benátská 2, Czechoslovakia

##### Nomenclature

- G. Zijlstra, Institute of Systematic Botany, Heidelberglaan 2, 3584 CS Utrecht, The Netherlands

##### Research and Development

- R. Mues, Fachrichtung Botanik, Fachbereich 16 der Universität des Saarlandes, 660 Saarbrücken, BRD
- J.G. Duckett, School of Biological Sciences, Queen Mary and Westfield College, University of London, Mile End Road, London E1 4NS, England, UK

##### Taxonomy

- D.H. Vitt, Department of Botany, University of Alberta, Edmonton, Canada T6G 2E9
- J.J. Engel, Field Museum of Natural History, Roosevelt Road, at Lake Shore Drive, Chicago, Illinois 60605, USA

##### Tropical Bryology

- D. Griffin III, Florida State Museum & Department of Botany, University of Florida, Museum Road, Gainesville, Florida 32611, USA

#### Correspondents

##### East Asia

- B.C. Tan, Farlow Herbarium, 20 Divinity Ave., Cambridge, Massachusetts 02138, USA

##### Austral Asia

- R.D. Seppelt, Antarctic Division, Department of Science & Technology, Channel Highway, Kingston, Tasmania 7150, Australia

##### North America

- R.A. Pursell, Buckhout Laboratory, Department of Biology, The Pennsylvania State University, University Park, Pennsylvania 16802, USA

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