

RETURN TO THE LOST WORLD, MOUNT RORAIMA (GUYANA)

By S.R. Gradstein

MOUNT RORAIMA (2,750 m) (Fig. 1) is the highest and best known of a group of sandstone table mountains, belonging to the Guayana highlands, in the south-eastern corner of Venezuela, and is located at the intersection of the boundary lines between Venezuela, Guyana and Brazil (Fig. 2). The major part of the mountain lies in Venezuela and only a small portion of the plateau, the northern 1/4, belongs to Guyana. The summit is almost completely encircled by two sheer cliffs, each 400-500 m. high. Leaping down the cliffs are several cascades and falls, which give rise to streams flowing to the Atlantic Ocean via the Amazon, the Essequibo and the Orinoco rivers. In Amerindian language, "Roraima" means "Mother of rivers". The seeming inaccessibility of the summit of Mount Roraima, noted by Robert Schomburgk and other 19th century explorers, gave way to the

belief that prehistoric forms of life persisted on the plateau and inspired Arthur Conan Doyle to write the novel *The lost world*. Since 1884, when Everhard Im Thurn and Harry J. Perkins discovered the ascent route to the summit and made the first collections on the plateau, numerous expeditions have been made to Mount Roraima and its flora has become comparatively well known. Important papers are those by Im Thurn and Oliver (1887) on Im Thurn's collections, by Brown et al. (1901) on McConnell and Quelch's collections and, more recently, by Steyermark (1966, 1979) on the results of his trips to Roraima and other table mountains. A colour picture-book on Roraima appeared recently in Venezuela (Brewer-Carias, 1984).

The summit flora has been found to harbour a rather high percentage of flowering plant taxa (species as well as genera), endemic to the Guayana highlands. But contrary to earlier beliefs, these taxa are usually not restricted to the summit plateaux, but are found also on the slopes, or at surrounding, lower altitudes (Steyermark, 1979). Steyermark (1981) has recently pointed out that all collections from the summit of Mount Roraima, including those labelled "British Guiana" (e.g. the McConnell and Quelch collections), are from Venezuelan territory.

Early access to the summit (the "classical route", see Fig. 2.) was from the South. Here the cliffs are at their lowest and meet with the upland savanna of Venezuela at about 1,400 m. At the north side, in Guyana, the mountain is surrounded by dense primary rain forest, which was not traversed by botanists until 1971. The route to the mountain from the north, the "Waruma trail" (Fig. 2.), is described in detail by Warren (1973). It was this route that our expedition took in 1985.

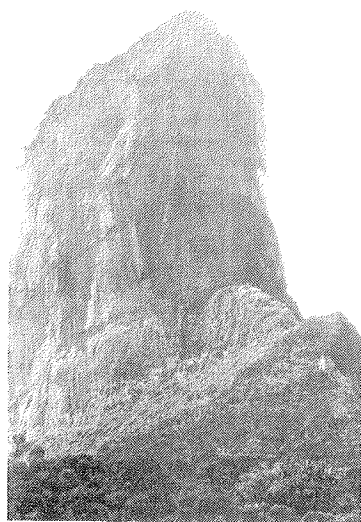


Fig. 1. View of the summit of Mount Roraima (north side) from the ridge

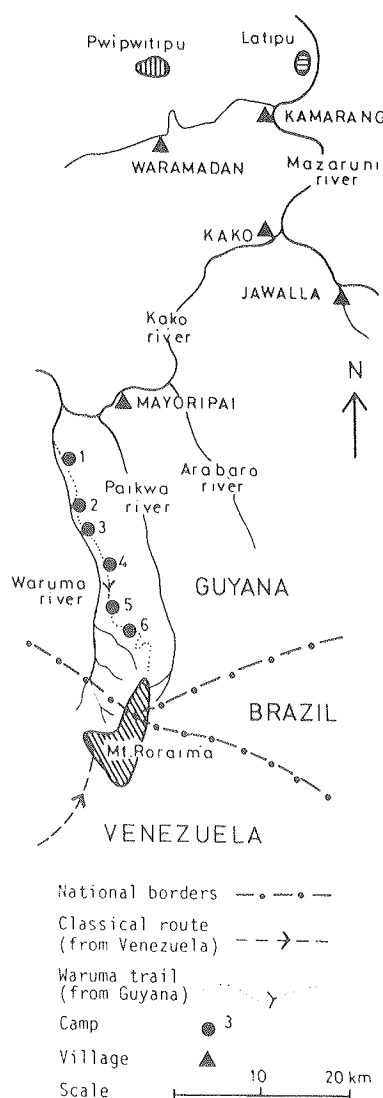


Fig. 2. The route to Mount Roraima

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A brief account of the topography and the climatological conditions of the area along this route is given by Holttum and Edwards (1983). The north side of the mountain is relatively wet as winds in the area are prevailing north-easterly, blowing moisture-laden ocean air from the Guyana coast to Mount Roraima. At the village of Pilippai (500 m) in a flat river drainage area approximately 45 km east of Mount Roraima, annual rainfall amounts to 2,800-3,600 mm and it may be assumed that the northern slopes of the mountain receive considerably more precipitation. During most of the year, the upper slopes of Mount Roraima are enveloped in clouds. As a result, a "mossy" forest vegetation is found on the slopes at this side of the mountain. Up to 1985, several British expeditions had explored the vascular flora of this side of the mountain, but the bryophytes and lichens of the area remained virtually unknown.

The chronology of the botanical exploration of the northern Guyana side of Mount Roraima (Guyana) will be found in the second newsletter of the "Flora of the Guianas" project, (Jansen-Jacobs et al. (1986)).

Itinerary

Our expedition had as its objectives to explore the Guyana side of the Mount Roraima (upper Mazaruni District) and to pay special attention to the bryophytes and lichens of the area. We were in the field from 3 February to 3 March, 1985. Our trip formed part of a major international botanical expedition to Guyana in the framework of the "Flora of the Guianas" project (Jansen-Jacobs et al., 1986). André Aptroot, Utrecht (lichens), S. Rob Gradstein, Utrecht (bryophytes, expedition leader), Jani Renz, Basel (orchids) and Harrie J. Sipman, Berlin (lichens) were the members of our party.

On 3 February we flew to Kamarang, the administrative centre of the upper Mazaruni District, where we took a room in the local guesthouse. When skies were clear we could catch an occasional glimpse of Mount Roraima in the far distance, about 80 km. further south. After a day of negotiations with local authorities and collecting around the village, we departed by boat to the Amerindian village of Jawalla, 3 hours up the Mazaruni river, to meet Mr. Isaac Jerry who had been recommended to us as foreman for the trip to Roraima. We were fortunate to find Mr. Jerry at home and willing to guide us to the

mountain.

On 7 February we left Jawalla - where we did some good collecting in the densely-forested surroundings of the village - with Mr. Jerry, 6 porters, 2 boats and provisions for 2 weeks. The next evening we reached camp I on the Waruma trail at the ultimate point of navigation of the Waruma river, about 30 km. from the mountain (Fig.2). Due to dry-season weather the water level in the rivers was rather low (and had become even lower on our way back) and some of the rapids in the Waruma river between the mouth of the river and Camp I had become difficult to pass. Moreover, several logs were blocking the river. At times everybody had to leave the boats and help pull them over the shallows towards deeper water. We were greatly impressed by the ease and skill by which the Amerindians got the boats over these obstacles. Meanwhile, we also had the opportunity to collect some interesting rheophytes in the rapids, including *Schusterolejeunea inundata*.

After landing, we decided to proceed to the mountain as soon as possible and to make a base camp at the foot of the mountain, at the site of old Camp 5 (750 m). Isaac Jerry went ahead with two Amerindians to open up the trail, which had become seriously overgrown and blocked by fallen logs. It took us 4 days to reach the foot of the mountain, marching from camp to camp in the morning and collecting in the afternoon. Fortunately the riverine forest between camps I and 4, which had been flooded during previous expeditions and difficult to pass, was dry and caused us no special problems. At Camp 5 the party was split up. Jani Renz remained there to collect in the submontane rain forest and to take care of the drying of the collections, while the others climbed up to Camp 6 (1,400 m). Three days were spent at Camp 6, from where André Aptroot and Rob Gradstein explored the montane scrub and swamps on the north ridge of Mount Roraima (2,000-2,300 m.), while Harry Sipman collected in the mossy forest around the camp. Although it rained heavily during the nights, we had mostly dry weather and even some sunshine during the day and could make very good collections on the slopes of the mountain. From "El Dorado swamp" on the north ridge, described in detail by previous explorers (Warren 1973, MacInnes 1976), we had breathtaking views of the cliffs of Roraima and surrounding table mountains.

On 18 February all expedition members were back in Camp 5

and due to a shortage of food, it was decided to return to Camp 1 as soon as possible. In two days we marched back through the forest and on 21 February arrived safely with our collections in Kamarang, where we said farewell to our Amerindian companions. In total we had collected 1,080 herbarium specimens at Mount Roraima: 100 flowering plants (including 30 orchids); 80 pteridophytes; 600 bryophytes and 300 lichens. In addition, several hundreds of specimens were collected around Jawalla Kamarang, including Mount Latipu and Mount Pwipwitipu. The collections are kept in U (general), B (lichens) and in the herbarium of J. Renz, Basel (orchids).

Notes on the vegetation belts of Mount Roraima (Fig.3).

I. Riverine rain forest (550m)

This consists of a fairly dense forest of trees with relatively thin trunks, rising to a height of 20-30 meters. There is a well-developed understory but the ground is densely covered by sclerophyllous leaves and generally devoid of plants. Epiphytes are rather common, especially where the tree cover is lessened and the forest more open. The bryophytes form thin mats 1-4 cm thick on the trunks, in which *Bazzania* (2-3 spp.) and *Plagiochila* (4 spp.) dominate. Rotten logs are covered by species of Hookeriaceae, *Leucobryum*, *Micropterygium* and *Anomoclada mucosa*. The most important epiphytic lichen groups include Thelotremaaceae, *Coenogonium*, *Coccocarpia* and *Phyllopsora*.

II. The submontane rain forest (550-1,200 m)

The gently-rising, lower slopes of the mountain are covered by a submontane forest not very different in aspect and species composition from the riverine forest, except for the increased "mossyness" of the forest. The bryophyte cover does not become so prominent as in the montane forest, however, and mats covering the trunks are less than 5 cm in thickness. With increasing altitude liverworts become more common, while mosses become sparser. From Camp 3 upwards a peculiar, robust liverwort was common on fallen trunks which, according to Dr. Grolle of Jena, is an undescribed species of a new genus of the family Lepidoziaceae.

III. The montane forest (1,200-1,600 m)

The montane forest occurs on the steeper slopes, from 1,200 m upwards to the base of the cliffs. The ground is very rocky and uneven, and the tree layer is slightly lower than in

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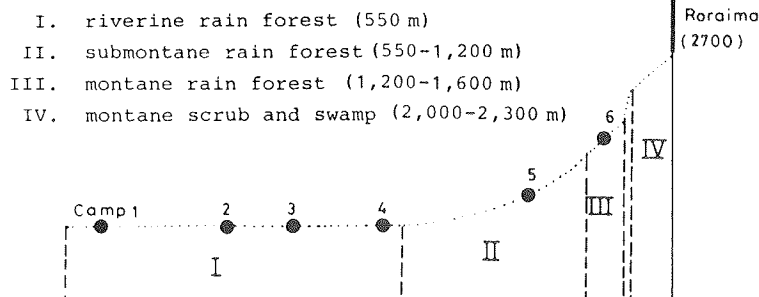


Fig. 3. Vegetation belts of Mount Roraima

the submontane forest and probably composed of different species. The montane forest is also considerably more "mossy", and huge bryophyte "furs" 1-2 dm thick, cover trunks and branches, while long garlands hang from twigs and saplings of the understory. The bryophytes include large quantities of species of *Bazzania*, *Herbertus* and *Plagiochila*, and, in addition, a number of montane neotropical species not usually found at lower elevations: *Hemiragis aurea*, *Lepidozia incurvata*, *Leucobryum giganteum*, *Lophocolea trapezoidae*, *Scapania portoricensis* and several species of *Riccardia*. In the Guianas all of these are known only from Mount Roraima. Interesting montane lichens included species of *Hypotrachyna* and *Erioderma*, the latter new to the Guianas.

IV. The montane scrub and swamp (2,000 - 2,300 m)

The north ridge below the summit of Mount Roraima is covered by a 3-4m high scrub which, in the lower, broadest portion of the ridge gives way to a wet, white sand savanna: the "El Dorado swamp" (MacInnes, 1976). The flowering plants of this vegetation belt are very interesting and include many taxa endemic to the Guayana highlands. The cryptogamic flora of the ridge is poor as compared to the flowering plants. In the swamp two widespread species of *Campylopus*, *C. subcuspidatus* and *C. richardii*, form large, peat-moss-like cushions. There is also *Racocarpus purpurascens*, a characteristic moss of the Andean paramos, and the rare, disjunct liverwort *Eopleurozia paradoxa*, known only from Roraima, and its twin sister, Mount Kukenaam, a few stations in the paramos of Colombia and Ecuador and from southern Chile. Characteristic montane lichens from the ridge include species of *Hypotrachyna*, *Erioderma* and *Oropogon* (new to the Guianas).

Twigs and branches of the shrubs are covered by huge, slimy masses of algae and harbour few other epiphytes. Why algae are so common here is not understood. Could it be that the strong winds

prevent bryophytes and lichens getting established on the shrubs by simply blowing away their diaspores? At any rate, it may be assumed that the algal growth is favoured on the ridge by the excessive air humidity due to the frequency of clouds and fog at this location.

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Leioscyphus repens Mitt.: a lost taxon from New Zealand?

By G.G. Hässel de Menéndez

MITTEN DESCRIBED (1855: 134) only one species from New Zealand, Northern Isl., Bay of Islands (creeping over *Lepidozia lindenbergii*, J.D.H.), when he established the new genus *Leioscyphus* Mitt. (= smooth cup). It had one important character, the terminal laterally compressed perianth, very well shown on his plate XCVII, Fig. 1, with 4 terminal perianths on one plant and 2 subfloral innovations under one of them. In the illustration one can see also the bifid amphigastrium with lateral basal teeth and the bidentate leaves. At the end of the generic description, between brackets, is "*Leptoscyphus* Mitt. 1851". (= delicate cup) included, suggesting the rejection of the earlier name. Using our present Code, (Voss, 1983) this case would fall into art. 63.1, and therefore *Leioscyphus* would be a synonym of *Leptoscyphus* Mitt., the reason used by Grolle (1983: 22) to discard with elegance the name *Leioscyphus* Mitt.

Later, Mitten (1860 : 225) placed 5 species and Hooker (1860 : 507) 3 species, apart from *L. repens*, in the genus *Leioscyphus*. Between 1905 and 1922, Stephani included as many as 61 species in the same genus, which have now found their way, for various nomenclatural reasons, into *Chiloscyphus*, *Clasmatocolea*, *Lepidoscyphus*, *Pedinophyllopsis*, *Heptastolonophora*, *Roivainenia*, *Nothostrepta*, *Heteroscyphus* and *Triandrophyllum*, as more details on them were obtained.

Hodgson (1943: 44) considered *L. repens* a synonym of *Chiloscyphus physanthus* (Hook. f. et Tayl.) Mitt., and Grolle (1962: 69) confirmed her statement. In spite of this affirmation, I was induced to believe that neither of them had seen the right plant, i.e. the type specimen of *L. repens*, because both the description and the illustration are sufficiently clear to obviate doubts and further discussion about the features of the plant and its identity.

If Hodgson's and Grolle's statements are correct, Hamlin's (1972) *Index* would also be correct in the sense that no hepatic with lateral compressed perianth, bearing well-developed amphigastria, exists in New Zealand

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LEIOSCYPHUS REPENS Mitt.: a lost taxon from New Zealand? [contd. from page 3.]

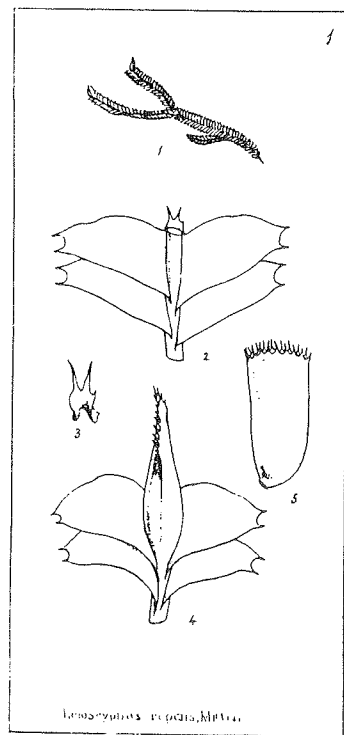


Fig. 1. *Leioscyphus repens* Mitten. Plate XCVII, Fig. 1. From Mitten W., 1855.

- there is no *Leptoscyphus* or *Leioscyphus* cited in bold type - and Mitten imagined the plant. Hamlin (1973: 145) cited in the additions to his Index in italic type, *Leptoscyphus australis* (Tayl.) Schust., a plant with rounded entire leaves and with compressed terminal two-winged perianthia, originally found on Campbell Isl. (Hooker & Taylor, 1844: 383, as *Jungermannia australis* Hook. f. et Tayl.). This species, which Schuster (1963: 270) claims to have found in New Zealand, was also once transferred to *Chiloscyphus* (Gottsche, Lindenberg and Nees ab Esenbeck, 1845: 189) and is, in Hamlin's list (1972: 255) also in italic type, mentioned as such. It differs apparently by its leaves and the winged perianth from *L. repens*. *Pseudolophocolea denticulata* Schust. et Engel (1982: 71, fig. 2-3), bears a laterally compressed perianth, but also seems not to refer to *L. repens*.

In order to find out about the type material of *L. repens* I got on loan from BM, the specimen listed by Thiers (1983: 282) as the holotype. Unfortunately, as illustrated here in Fig. 2, the specimen had quadrifid amphigastria, is sterile and is unrelated to *L. repens*. The specimen from NY, "New Zealand, leg. Lyall, holotypus of *L. repens*" apparently seen by

Grolle (1962: 69) cannot be found in the herbarium (pers. comm. B.M. Thiers). Dr. E. Campbell saw a specimen from WELT, labelled *L. repens*, but it was only a small scrap with no perianth (pers. comm.).

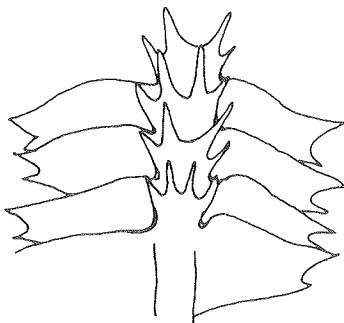


Fig. 2. *Leioscyphus repens* Mitt.: New Zealand, J.D. Hooker, creeping over *Lepidozia lindenberghii*. BM.

Does a plant like Mitten's illustration exist, or not? Is it permissible to wipe off *Leioscyphus* as genus, and *L. repens* as a species, from the New Zealand hepatic flora? My questions are directed primarily to those hepaticologists who work and have been collecting in New Zealand.

My best thanks to Mr. J. Cannon (BM) and Dr. B. Thiers (NY) for their information and search for the specimen related to this question, as well as to Dr. E. Campbell (MPN) who took an interest in the same subject.

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Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Avenida Angel Gallardo 470, Casilla de Correo 220, Sucursal 5, 1405, Buenos Aires, Rep. Argentina.

Desiderata

DALE H. VITT is currently revising *Macromitrium* and *Schlotheimia* in New Guinea. He requests collections of these genera from this area, and he will be happy to name any material.

Please send specimens to him at the University of Alberta, Department of Botany, Edmonton, Alberta, Canada T6G 2E9.

XIV International Botanical Congress, Berlin (West), Germany,

24th July to 1st August, 1987.

THE FOLLOWING ARRANGEMENTS, for bryological contributions to the Congress, have been announced:

Division 5: Systematic and Evolutionary Botany

5-12 Life strategies in bryophytes: Organizers:
S.R. Gradstein, J.-P. Frahm, M.C.F. Proctor & W. Frey.

(a) In tropical rain forests

- Pócs, T. Changes in the biomass and productivity of bryophytes in East African rain forests.
Richards, P.W. Tropical forest bryophytes: synusia and strategies.
Schuster, R.M. Reproductive biology and ecology of tropical Hepaticae and their relation to their distribution.
Thiers, B. Morphological adaptations of hepatics to the tropical rain forest habitat.
Vitt, D.H. Structural adaptation of mosses to rain forest habitats.
Zanten, B.O. van. The resistance of spores of tropical bryophytes and hepatics to dessication, freezing and UV radiation, in relation to their distribution and habitat.
Geissler, P. Ecological adaptation and phytogeography—problems of speciation in the Lejeuneaceae genus *Marchesia*.

(b) In arid environments

- Longton, R.E. Reproductive strategies of bryophytes in arid environments.
Scott, G.A.M. Morphological strategies in bryophytes of arid environments.

5-14 Taxonomy of higher categories and generic concepts in bryophytes: Organizers:
D.H. Vitt & R.M. Schuster.

- Bischler, H. Relationships in the Marchantiales.
Buck, W.R. Pleurocarpous families.
Crosby, M.R. Hookeriales revisited.
Edwards, S.R. Endostomial homologies.
Murray, Barbara. Andreaeaceae and Andreaebryaceae.
Vaña, J. Family relations: structural bases in the Jungermanniales.
Hässel de Menéndez, G.G. Proposal for a new classification within the Anthocerotopsida.
Miller, H.A. Placing Pacific "Isobryales" in a classification.
Hasegawa, J. A proposal of a new system of the Anthocerotae with a revision of the genera.
Koponen, T.J. The phylogeny and classification of Mniaceae and

Rhizogoniaceae (Musci).
Inoue, H. Concepts of sectional and subgeneric levels in the genus *Plagiochila* (Hepaticae).

5-15 Evolution in bryophytes: chemosystematic approach:
Organizers: S. Huneck & R. Mues.

- Asakawa, Y. The chemical evolution of mono- and sesquiterpenoids in bryophytes.
Connolly, J.D. Higher terpenoids and steroids and their meaning in the evolution of bryophytes.
Zinsmeister, H.D. The chemotaxonomy of phenolic compounds in bryophytes.
Odrzykoski, I. Phylogeny of the *Conocephalum conicum* species group based on macromolecular data.
Hofman, A. Intra- and interspecific allozyme variation in the moss genus *Plagiothecium*, in relation to breeding system and ploidy level.
Chia-Li Wu. Special features of the chemical constituents of Taiwanese liverworts.
Shu-Jen Chang. Chemical constituents of Taiwanese liverworts.
Gradstein, S.R., Asakawa, Y. & R. Mues. On the taxonomic significance of secondary metabolites in the Lejeuneaceae (Hepaticae).

5-16. Cytotaxonomy, ultrastructure and systematic relationships in bryophytes: Organizers:
B.E. Lemmon, A.J.E. Smith, B. Crandall-Stotler & W. Frey.

(a) Cytotaxonomy

- Chopra, R.N. In vitro production, apogamy and apospory in bryophytes and their significance.
Ramsay, H.P. Cytological and biosystematic studies on some Australasian mosses.
Masubuchi, M. B chromosomes in *Aneura maxima* (Hepaticae).

(b) Ultrastructure

- Lemmon, B.E. Ultrastructural details of sporogenesis in mosses, liverworts and hornworts, and their phylogenetic implications.
Ligrone, R. Ultrastructure of the gametophyte/sporophyte junction and its relationship to bryophyte evolution.
Crandall-Stotler, B. Fine structure of the meristematic cells of *Takakia lepidozoioides*.

Excursion Programme

Although the full programme is not yet available, it is known that Excursion No. 06 to central

and southern Germany (FRG) has been cancelled.

Other arrangements

No further information is available beyond what was given in the Second Announcement published in *Bryol. Times*, 37:8, May, 1986, which should be consulted. When the Third Circular becomes available, further details will be announced in these columns.

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Membership of IAB

THE FOLLOWING LISTS for the period 1 July - 31 August, 1986, up-date those already published. The last list appeared in *Bryol. Times*, 39:7.

New Members

Lewis, Marco*; Bartholomew, Sharon E.*; Kelly, M.G.*; Whittemore, Alan*.

Addresses

Lewis, Marco, Herbario Nacional de Bolivia, Casilla 20127, La Paz, Bolivia.

Bartholomew, Sharon E. Department of Botany, Southern Illinois University, Carbon dale Ill. 62901, U.S.A.

Kelly, M.G. Department of Botany, University of Durham, Durham DH1 3LE, England, U.K.

Whittemore, Alan. Department of Botany, University of Texas, Austin, TX 78712, U.S.A.

Change of Address

Library, Australian National Botanic Gardens, P.O. Box 1777, Canberra A.C.T. 2601, Australia.

Arrocha, Clothilde. Entrega General David, Prov.de Chiriqui, Rep. de Panama.

Basile, Margaret R. Department of Biological Sciences, Lehman College, CUNY, Bronx, NY 10468, U.S.A.

Cramer, J. Am Hasengarten 23A, D-3300 Braunschweig, Germany B.R.D.

EIGHTH ALL INDIA BOTANICAL

CONFERENCE, HYDERABAD,

December 28-30, 1985.

By Jagdish Lal

IN PREVIOUS YEARS, the Bryophyta were grouped in one Section along with Pteridophyta, Gymnosperms and Palaeobotany. This year the Indian Botanical Society took special care and created a separate 'Section - V' for presentation of papers on the Bryophyta.

In all 12 papers were presented, of which 10 dealt with Hepaticae (Lucknow Univ.-8; Birbal Sahni Institute of Palaeobotany - 1; National Botanical Research Institute - 1) while the other two (Kumaon Univ. Nainital - 1; Botanical Survey of India, Itanagar - 1) included mosses also.

The following is the list of papers presented:

1. Asthana, A.K. A study of *Anthoceros crispulus* (Mont.) Douin with SEM details of spores.
 2. Srivastava, S.C. & Deepak Sharma. *Calypogeia fissa* (L.) Raddi - A rare marsupial liverwort from eastern Himalayas.
 3. Shaheen, F. *Porella densifolia* (St.) Hatt. in India.
 4. Singh, Panzy. A study of *Jungermannia* (Solenostoma) *subrubra* Steph. endemic to eastern Himalayas.
 5. Awasthi, U.S. The genus *Leptolejeunea* (Spruce) St. in India.
 6. Srivastava, S.C. & A. Srivastava. A new *Heteroscyphus* Schiffn. from eastern Himalayas.
 7. Agarwal, A. The genus *Microlejeunea* (Spr.) Jack & St. in India.
 8. Srivastava, G. *Cololejeunea* (Chlorolejeunea) *madrothecoides* (Steph.) Benedix in India.
 9. Gupta, Asha. A new species of *Riccia* (Mich.) L. from Lucknow district, Uttar Pradesh.
 10. Nath, V. Genus *Frullania* Raddi from Pindari Glacier Valley.
 11. Tewari, S.D. & M.C. Pargaien. Bryophytes associated with Iron Limonite-bearing acidic substrates in Kumaon Himalaya.
 12. Lal, J. Epiphyllous bryophytes of Itanagar and its vicinity.
- Botanical Survey of India, Arunachal Pradesh Circle, Itanagar-791 111. (Arunachal Pradesh) India.

[Note Dr. Lal's new address. He was formerly at Allahabad. Ed.]

BRYOPHYTE

INVESTIGATIONS IN

LUXEMBOURG

By J. Werner

THE NATURAL HISTORY MUSEUM (Musée d'Histoire Naturelle) of Luxembourg (Grand-Duché) will soon initiate a bryophyte research programme, to run for a number of years, on a study of the sandstone gorges around Echternach, Berdorf, Consdorf, Beaufort, i.e. the so-called Luxembourg "Petite Suisse" ("Kleine Luxemburger Schweiz" or "Müllerthal"). The bryophyte flora and vegetation of this area is outstandingly rich and many rare taxa have been found in the very special microclimatic biotopes of these sandstone rocks.

Colleagues wishing to participate in the research programme - which will extend also to bryo-sociology and investigations on the microclimate - should contact Mr. Jean Werner, 32, rue Michel Rodange, L-7248 Bereldange, G.D. of Luxembourg, who is co-directing the project and who will be very thankful for any assistance. All colleagues who have visited the area and collected bryophytes, are kindly invited to forward any collecting data and lists to the above-mentioned address by the end of 1987.

CRYPTOGAMIE, VOL. 7, 1986:

an extra fascicule

LA RÉDACTION est heureuse de pouvoir offrir à ses abonnés, en supplément au fascicule 3 du tome 7 (1986), grâce à la générosité de l'auteur, le travail de synthèse de Mme. Suzanne Jovet -Ast: *Les Riccia* de la région méditerranéenne.

Après quelques données biogéographiques sur les *Riccia* dans le bassin méditerranéen, l'auteur donne des clés basées sur les caractères du thalle et 31 espèces reconnues dans cette région. Chaque espèce est décrite, son habitat et sa distribution sont indiqués. Une importante illustration (65 pl.) notamment sur les spores, ainsi qu'un index spécifique complètent ce travail. Ce volume pourra être acquis séparément, au près de la Rédaction de CRYPTOLOGIE, Bryologie-Lichénologie, au prix de 180 F (port compris).

D. Lamy, Laboratoire de Cryptogamie, Muséum National d'Histoire Naturelle, Laboratoire de Cryptogamie, 12, rue de Buffon, 75005, Paris, France.

LES HERBIERS BRYOLOGIQUES

DE L'HERBIER DE PARIS (PC)

I. - L'herbier G. Thuret

(1815 - 1875)

EN PLUS DE L'HERBIER GENERAL du Laboratoire de Cryptogamie, le laboratoire possède toute une série d'herbiers plus ou moins considérables, plus ou moins en ordre et par la même peu consultables. Il n'est pas question d'en donner ici la liste puisque nous ne savons pas ce qu'il existe dans ces herbiers. Signalons, par exemple, les petites collections provenant de Palisot de Beauvois et de Richard.

Nous donnons, pour commencer, quelques indications sur l'herbier Thuret. Cet herbier comprend des Algues, des Champignons, des Lichens, et des Mousses. Rappelons, en quelques mots, le souvenir de G. Thuret (1817 - 1875) qui fut un des premiers à étudier les gamètes des Algues. Après un début de carrière dans la diplomatie, Thuret se consacra à l'étude des Algues d'abord à Cherbourg, puis, après 1867, sur les bords de la Méditerranée, au Cap d'Antibes.

L'herbier bryologique Thuret comprend environ 4,700 échantillons. On y trouve 167 genres de Mousses, avec 684 espèces, et 2,902 échantillons. En ce qui concerne les Hépatiques, on décompte 56 genres, 256 espèces et 1,816 échantillons, dont nous avons dressé la liste.

Thuret n'était pas bryologue et son herbier ne contient guère de matériel original, cependant notre attention a été attirée par le fait que BESCHERELLE (1880) situait le type de *Schlotheimia microphylla* dans l'herbier Thuret. Cet herbier est plus particulièrement orienté vers la bryologie européenne, et est été alimenté par des achats d'exsiccata (RABENHORST par exemple), plus que par des échanges.

En définitive, cet herbier est accessible au Muséum National d'Histoire Naturelle de Paris. Signalons seulement qu'il est conservé, à la Cryptogamie, à la bibliothèque et non dans les galeries de collection.

P. Tixier, Muséum National d'Histoire Naturelle, Laboratoire de Cryptogamie, 12, rue Buffon, F-75005, Paris, France.

Impressions of the Fifth Meeting of CEBWG

By Manfred Siegel

THE FIFTH MEETING of the Central and East European Bryological Working Group (CEBWG) was held in Leipzig under the joint sponsorship of the Biologische Gesellschaft der DDR and the University of Leipzig, 25-29 August, 1986.

Our programme started on Tuesday 26th with 36 participants from 8 countries present. The morning session was opened by G. Müller, Leipzig, who spoke about the history of bryology in Leipzig. The University of Leipzig, founded in 1409, has a long history in botany, having the first permanent, still-existing botanical garden in Central Europe, the so-called "hortus medicus", founded in 1580. Some famous bryologists have worked in Leipzig, for example Johannes Hedwig, the so-called Linnaeus of mosses and founder of bryology, who worked there from 1786 to 1799. After his death his work *Species muscorum frondosorum*, the starting point of moss systematics, was published in 1801. He explained the sexual organs of mosses, the germination of spores, and the development of the moss plant. The metagenesis was discovered 80 years later by Hofmeister (born in Leipzig). The well-known German poet J.W. von Goethe visited Johannes Hedwig and was very pleased with his drawings and microscopic slides.

Later, Christian Friedrich Schwägrichen worked in Leipzig, well-known among bryologists for his *Synopsis of Hepatics* and the moss treatise for the fourth edition of Linnaeus's *Species plantarum*. The third famous bryologist from Leipzig who was mentioned was Wilhelm Mönkemeyer. He worked from 1890 to 1920 as an Inspector of the botanical garden and published in 1927 his standard work *Die Laubmoose Europas*, which was, in fact, a supplement of the much earlier work by Limpricht in Rabenhorst's *Kryptogamenflora*.

R. Grolle, Jena, then read a paper about the bryological landscape of the GDR, illustrated with a poster. Former bryologists who had resided in the area were plotted on a map with details of the dates showing the duration of their stay at the various sites. Three main centres of bryology in the area were mentioned: Leipzig, Berlin and Jena. Jena was favoured by Th. Herzog and his scholars,



while Schreber, Stephani and Goebel all worked in Leipzig. The names of other famous bryologists who worked in the area come to mind, such as Bridel (Gotha), C. Müller hal. (Halle), Geheeb (Geisa), Hampe (Blankenburg Harz), Rabenhorst (Dresden), Hornschuch (Greifswald) and many more. Leipzig, being the earliest main centre of bryology, was certainly the right choice of venue for this meeting.

Dr. Grolle finished his statement with a thriller! It appears that in the dark ages before civilized bryology began about 4,000 years ago, people of the Bronze Age spread mats of *Rhytidiadelphus triquetrus* on the floors of deep caves in the Kyffhäuser Mountains (marked by a death-head on Dr. Grolle's poster) for their comfort during rites of cannibalism!

Other papers in this session were as follows:-

J. SZWEYKOWSKY, Poznań: Problem of shape characteristics and comparison in bryophytes.

Z. SOLDAN, Prague: *Eurhynchium striatum* (Hedw.) Schimp. and *E. angustirete* (Broth.) T. Kop. in aspects of biometrical analysis.

R. OCHYRA, Kraków: The familial placement of the moss genus *Scorpidium* (Schimp.) Limpr.

M. KRZAKOWA, Poznań: Enzyme variability of haploid and diploid plants in relation to intra- and interspecific differentiation.

R. GROLLE, Jena: *Bazzania*, with preserved oil bodies from Dominican amber. Everyone knows that oil bodies will disappear on the death of cells in a few weeks or months. Sometimes they are to be found later. It is a miracle of nature that such oil bodies, which are about 20 million years old, should be preserved. The liverwort described by R. Grolle as *Bazzania oleosa*, which has 3 to 8 oil bodies in every cell, was demonstrated with the aid of a slide.

S. ORBÁN, Eger: Studies on African Calymperaceae, VI.

D. BENKERT, Berlin: Appearance of parasitic fungi of the Pyrenomataceae (Pezizales) on some moss genera. The bryoparasitic cup fungi of the genera *Octospora*, *Lamprospora*, *Neottiel-*

la, and *Octosporella* are found mainly on acrocarpous mosses - rarely on pleurocarpous mosses or hepatics. The following genera are frequently attacked by bryoparasitic cup fungi: *Bryum*, *Ceratodon*, *Funaria*, *Grimmia*, *Polytrichum*, *Barbula s. lat.* and some other Pottiaceae. *Dicranum*, *Racomitrium*, *Schistostegia*, *Mniaceae* and others are free from such fungi. The lecturer urged the participants to collect such bryoparasitic fungi during their field work. The apothecium of these fungi is 0.5-4 (12) mm in diameter, and due to cartenoids ± orange coloured. It is recommended to collect and to dry such fungi together with mosses and to send them to the lecturer. Bryologists ought also to help mycologists in the determination of host-mosses.

R. FRITSCH, Gatersleben: Chromosomes of some Caucasian liverworts.

S. HUNECK, Halle: News about the chemistry of liverworts.

After the afternoon session we had a sightseeing tour in the centre of Leipzig under the leadership of G. Müller. In the evening the "Biologische Gesellschaft der DDR" and the University of Leipzig invited the participants to a welcoming party in the "Haus der Wissenschaftler" where we relaxed and confined our talk to matters non-bryological.

Wednesday, 27th August. Papers in this session were as follows:-

U.K. MAMATKULOV, Dushanbe: Phytogeographical and ecological peculiarities of middle Asian bryophytes.

N. KONSTANTINOVA, Kirovsk: Hepatic flora of the Lovozor Mountains (district Murmansk, USSR).

V.A. MANAKYAN, Jerevan: The mosses of forests of Armenia.

H.J. ZÜNDORF, Jena: The mosses of Cuba, a phytogeographical analysis.

R. MARSTALLER, Jena: Ecology and distribution of some photophilic and thermophilic moss communities in the southwest of GDR.

G. PHILIPPI, Karlsruhe: Distribution and phytosociology of *Atrichum angustatum* in South-western Central Europe.

G. NORDHORN-RICHTER, Duisburg: Distribution of the bulbiferous *Pohlia* species in Central Europe.

S. SLOBODDA, Greifswald: Problems and experience with involving mosses for ecological characterisation of bogs.

L. MEINUNGER, Steinach: About some GDR mosses critical for mapping.

W. BORS DORF, Dresden: 25 years of moss mapping in Saxony - an attempt at a critical evaluation.

At the end of the session

[continued on page 8.]

Impressions of CEBWG V [contd. from p.7.]

Dr. Jiri Vána, Prague, announced that the next meeting would be held in Czechoslovakia from 12th to 15th September in Liblice, 40 km NE of Prague. Professor Dr. Szwejkowsky, Poznan, expressed his gratitude to all colleagues who had contributed to the success of the meeting.

It was a great disappointment to learn that the lectures will not be published.

After the afternoon session we had the opportunity of going by train to Rõtha to an organ recital in the Church of St. George. The organ there was made by a very well-known organ builder called Silbermann. The soloist at the recital was Volker Bräutigam who, as well as being a professional musician, is also an amateur bryologist. He was assisted by his wife Maria.

On Thursday, 28th August, there was a day's excursion by train to Pössneck. In many places along the so-called "Orlasenke" - a broad strip of Upper Permian formation between Saalfeld, Pössneck and Neustadt/Orla, there are zechstein reefs, built up of hard dolomite, which accounts for the fact that this district has a characteristic calcareous bryoflora. We walked from Pössneck to Krölpa, and found *Scapania calcicola*, *Aloina rigida*, *Didymodon cordatus*, *Pterygoneurum ovatum*, *Pseudocrossidium revolutum*, *Didymodon vinealis*, *Gyroweisia tenuis*, and many other bryophytes. After lunch in Krölpa we visited the Pinsenberg which has the richest flora of the whole area. On the south-facing slope we found *Hypnum vaucheri*, *Pseudoleskeella catenulata*, *Tortula intermedia*, and *Grimmia orbicularis*. On the northern slope we found *Distichum capillaceum*, *Preissia quadrata*, *Lophozia collaris*, *Hygrohypnum luridum* and *Myurella julacea*. Some other species were found along the route of the excursion, e.g. *Cirriphyllum crassinervium*, *Anomodon attenuatus*, *Eurhynchium striatulum*, *Scapania aequiloba*, in addition to the many calciphile bryophytes distributed widely throughout Thuringia.

On Friday, 29th August, we had another excursion, this time to the "Schweizerling" near Wetten. It was a rainy day, and we met in front of the "Gewandhaus". We went by bus, first to the "Schweizerling" where we found *Riccia ciliifera* and some cushion-forming *Grimmia* species on south-facing porphyritic rocks such as *Grimmia laevigata*, *Grimmia montana* and *Grimmia ovalis*, as well as other mosses. We then continued our bus trip to Thale in

the lower Harz Mountains, and after lunch we walked through the canyon-like valley of the river Bode. The district is well known for its outstandingly-rich flora, since some of the bryophytes to be found there are the rarest in Central Europe outside the Alps. Therefore for many years it has been a protected area. We found *Reboulia hemisphaerica*, *Fissidens cristatus*, *Plagiobryum zierii*, *Frullania tamarisci*, *Lejeunea cavifolia*, *Tritomaria quinqueidentata*, *Barbilophozia barbata*, *Metzgeria conjugata*, *Cinclidotus fontinaloides*, *Scapania compacta*, *Scapania lingulata*, *Isoetecium alopecuroides*, *Isoetecium myosuroides*, *Amphidium mougeotii*, *Coscinodon cribrosus* and many other species.

After our excursion the time had come to say farewell. Dr. Fritsch and Dr. Müller deserve a special word of thanks for all their help, and so do our two guides, Dr. Marstaller and Dr. Meinunger.

DDR 8017, Dresden, Edgar-Andre-Str. 29.

EDWARD CHARLES WALLACE 1909 - 1986.

By A.C. Crundwell



BY THE DEATH OF TED WALLACE on the 23rd July, 1986, British botany has lost one of its most distinguished amateurs.

Ted was born in Blackfriars, London, on 12th February, 1909, but when he was two, his parents moved to a house in Sutton, in the outer suburbs of London, and this house remained his home for the rest of his life. He was an only child and for his last twenty-five years, after the death of his mother, he lived alone.

He was educated locally at the Sutton County School. He had no family background in botany, and no parental encouragement either, but from the age of five he was interested in flowers and in pond life, and by the time he was ten he was looking at mosses. When

comparing some of his own specimens with others on display at the British Museum (Natural History) he was spotted by A. Gepp, who introduced him to W.R. Sherwin, who took him under his wing and introduced him to the world of botanists.

At school he was expected to play games and sports, but these had no appeal and he played truant. He got into trouble, but firmly told his teachers that botany was more important than games, and he was eventually allowed to go his own way.

If he had been born twenty years later, he would have had access to grants to enable him to continue his education and go to a University, but his father, successively taxi-driver and printer, had no money for this, and for Ted it was out of the question. He left school at sixteen to work as a clerk in the head office of W.H. Smith & Son, booksellers and newsgents. He remained with them for the rest of his working life, apart from a period of war service with the Royal Air Force in India and Burma.

Up to the time of his retirement in 1972, his week-ends were spent in local excursions, his holidays mostly in the Highlands of Scotland in company with his great friend Robert Mackechnie, a Glasgow schoolmaster who was an equally keen botanist. But when he retired he was able to spread his wings and he travelled extensively in Europe and also visited Japan, Australia, Kashmir, Florida and Alaska. During his last few years, failing health restricted his activities, but not by any more than he could help. He continued his excursions, at home and abroad, often to the apprehension of those who would have to take charge if he were ill; but he was determined to wear out, not to rust out. A doctor told him a few months before the end that he was unfit to look after himself and that he should go into a home for the aged. But for Ted that would have been a living death, and with the help of a kindly neighbour he carried on, and his last excursion was only ten days before he died.

Ted was an accomplished field naturalist with a first-rate knowledge of vascular plants and bryophytes, and considerable expertise with lichens and butterflies. His additions to the British bryophyte flora included *Tortella inflexa*, *Pohlia crudoides*, *Hygrohypnum polare* and *Barbula mamillosa*. He was also an enthusiastic collector. His bryophyte herbarium, which he bequeathed to the National Museum of Wales, Cardiff, is probably as big as that of any other British botanist, past or present. [continued on page 9.]

Edward Charles Wallace [contd.
from p.8.]

His urge to collect extended beyond the range of botany, for he had a very large stamp collection, several postcard albums, and saved all his correspondence. He also amassed an excellent library, covering not only taxonomy, but also ecology, conservation, geology and travel.

Ted published relatively little. Perhaps his most influential work was the Annotated list of British mosses, published in 1949 in collaboration with P.W. Richards. Before this the taxonomy and nomenclature used in the British Isles had become so antiquated that British bryology was becoming isolated, and this revision did much to bring it back into the main stream. The system of Richards and Wallace was in use with only minor changes for nearly thirty years.

There was nothing exclusive or selfish about Ted's love of plants. He was Secretary of the British Bryological Society for twenty years, and this with no office facilities. He addressed each envelope by hand, wrote personally to new members and did all he could to encourage beginners. When the Society ran its annual Distribution, or exchange of specimens, his was nearly always the biggest parcel, containing far more than he could possibly hope to receive in return. Over the years he sent in well over 10,000 packets. He was always glad to put his herbarium, his library and his encyclopedic knowledge at the service of anyone who asked. But with all his ability, he was an exceedingly humble man. He gave his opinion without hesitation when asked, but he never thrust himself forward and never pontificated. If anyone questioned an identification, he took no umbrage - he just looked at the specimen again.

A modest and unselfish man, of great energy and great ability, he will be much missed by his many friends.

12, Kay Crescent, Headley Down, Hampshire GU35 8AH, England.

Personalia

NORIS SALAZAR ALLEN successfully defended her Ph.D. thesis entitled "A revision of the Pan-tropical moss genus *Leucophanes* (Bryopsida, Leucophanaceae). Her external examiner was Dr. H.A. Miller of Florida Technological University, Orlando. She has accepted a position at the University of Panama, Panama City, Panama, as of July 1986. In addition to her teaching duties in the Department of Biology, she will begin working on a Moss Flora of Panama.

Society News

BBS - BRITISH ECOLOGICAL SOCIETY,
INTERNATIONAL SYMPOSIUM
ON BRYOPHYTE ECOLOGY,
UNIVERSITY OF EDINBURGH,
19-21 JULY, 1988.

THE MEETING will comprise four half-day sessions, during which invited contributors will present papers relevant to the themes Bryophyte production and decomposition; Interactions between bryophytes and other organisms; Bryophyte population biology; and Bryophytes in man-modified ecosystems. There will also be two sessions of contributed papers, and poster sessions. Offers of contributions are invited, but the organizers reserve the right to select those to be presented orally.

The Symposium will take place during the BBS Summer field meeting based at Edinburgh, and at a site in the Scottish Highlands, which all Symposium participants are most welcome to attend.

Further details may be obtained from Dr. R.E. Longton, Department of Botany, Reading University, RG6 2AS, Berkshire, U.K., to whom offers of contributions should be sent

BBS - LINNEAN SOCIETY JOINT MEETING

THIS MEETING will be held in the Rooms of the Linnean Society, Burlington House, Piccadilly, London, on 7th May, 1987, as part of the 200th Anniversary celebrations of the Linnean Society. It will take the form of a Symposium during which a team of internationally-recognized authorities will present papers reviewing current status and future prospects in several aspects of bryophyte systematics and evolution, biogeography and ecology.

Details may be obtained from Dr. M. E. Newton, Department of Botany, The University of Manchester, M13 9PL, England.

BULLETIN OF BRYOLOGY

NO. 23

Contents

BRYOLOGICAL ACTIVITIES connected with the XIV International Botanical Congress, Berlin (West) July 24 to August 1, 1987.

The relevant symposia and the organizers of these are listed; there is a list of the bryological excursions, including routes and organizers, that are scheduled prior to and after the Congress; program details of the Bryological Methods Workshop to be held in Mainz prior to the Congress are included; and details of the procedures for selecting the recipient of the Hedwig Medal to be presented at the Congress are given.

DELGADILLO M., C. Additional recommendations for bryologists visiting the tropics.

The Committee for Tropical Bryology have added to the list of recommendations published in 1981 by Mori and Holm-Nielsen. The purpose of the Committee is to suggest things that a bryologist planning to visit a tropical country should consider in order to make the trip more successful, both for himself/herself and for the bryologist of the host country.

FLATBERG, KJELL I. Review of Roger Daniels and Alan Eddy's Handbook of European Sphagna.

Diana Horton, Editor, Department of Botany, University of Iowa, Iowa City, Iowa 52242, U.S.A.

Recent Publications

Briolatina, No. 9: 1-8, 1986.

Bryologist, 89(1): 1-88, 1986.

Bull. BBS, No. 48: 1-28, 1986.

Bull. Bryol. No. 22 In *Taxon* 35 (3): 614-617, 1986.

Buxbaumia, No. 18: 3-5, 1986.

Crypt. Bryol. Lichen., 7(3): 189-282, 1986; 7(3 Suppl.): 283-287-431, 1986.

Evansia, 3(1): 1-16, 1986; 3(2): 17-32, 1986.

J. Bryol., 14(1) 1-201, 1986.

J. Hattori Bot. Lab., 60: 1-456, 1986.

Lindbergia, 11(2-3): 73-176, 1985 [Issued 19 Sept. 1986].

Muscillanea, No. 5: 3-70, 1986.

Proc. Bryol. Soc. Japan., 4(5): 73-88, 1986.

Taxon, 35(2): 225-468, 1986; 35 (3): 469-645, 1986.

BRYOLOGICAL ARRANGEMENTS

AT UTRECHT 1986-1987

S. ROB GRADSTEIN, Utrecht, has been appointed visiting professor at the University of Michigan during the academic year 1986-87. From August 20, 1986 until June 1, 1987 his address will be: Department of Botany, The University of Michigan, Ann Arbor, Michigan 48109 - 1048, U.S.A., Tel.: 764-8538 (Howard Crum's Office).

During his leave from Utrecht, Guido van Reenen will be acting curator of the cryptogamic herbarium of the University of Utrecht, and dealing with all correspondence concerning loans, etc.

Correspondence about IAB membership and payments may, as usual, be sent to Utrecht, where Mr. Niko de Kwaadsteniet (IAPT-Bureau) continues to deal with IAB administration during Dr. Gradstein's absence.

BRYOLOGICAL ACTIVITIES AT UNAF

STEVE L. TIMME has accepted a position as Assistant professor of Botany in the Department of Biology, University of North Alabama. In addition to teaching, he will continue work on neotropical bryophytes and bryophytes of south-eastern U.S.A. He will also be curating and developing the herbarium (UNAF) bryophyte collection. Currently, the collection contains approximately 3,000 bryophyte species (most are from his collections).

Dr. Timme would like to begin an exchange program with other herbaria, especially of neotropical hepaticae. Any suggestions or advice is welcomed, and should be sent to him at: Department of Biology, P.O. Box 5284, Univ. of North Alabama, Florence, AL 35632-0001, U.S.A.

NEXT CEBWG MEETING TO BE IN CZECHOSLOVAKIA

THE CENTRAL AND EAST EUROPEAN Bryological Working Group is planning to hold its 6th biennial meeting in 1988.

It will be held in the Baroque Castle of Liblice (which will provide accommodation, as well as lecture facilities), situated near the town of Mělník, ca. 40 km to the north of Prague.

The meeting will last for 4 or 5 days, from 12th September,

and will probably have two days of lectures, together with two day-long excursions. One of the excursions will be to an area of cretaceous sandstone outcrops in North Bohemia.

Further information will be made available, when it is ready, by:

T. Herben, Botanical Institute, Czechoslovak Academy of Sciences, 25243 Průhonice, Nr. Praha, Czechoslovakia.

DIARY

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

Nov. 1-2. BBS. Taxonomic Workshop, University of Reading. Local Sec.: Dr. R.E. Longton, Dept. of Botany, The University, Reading RG6 2AS, Berkshire, England. For details, see *Bull. BBS.*, 48: 13.

Nov. 9. VWGB. Field trip to Hoo-gaarden-Meldert, Prov. of Brabant. Meet 09.30 hrs. at the church in Hoogarden.

1987

April 1-8. BBS. Spring Field Meeting, Penzance, Cornwall. Local Sec.: Mrs. J.A. Paton, Fair Rising, Wagg Lane, Probus, Truro, Cornwall TR2 4JU. For details see *Bull. BBS.*, 47.

July 17-23. IAB. Mainz. Bryological Methods Workshop. For further information see *Bryol. Times*, 39:5.

July 24-1 Aug. XIVth IBC Berlin (West). Preceded by IAPT Nomenclature Session, July 20-24. For Second Circular, see

Bryol. Times, 37:8. Congress address: XIV IBC. Bot. Garden and Museum, Königin-Luise-Str. 6-8, D-1000, Berlin (West) 33, Germany. See this issue p.5.

July - Aug. BBS. Summer field meeting, Achill Island, Co. Mayo and Westport. Local Sec.: Dr. D.M. Synnott, National Botanic Gardens, Glasnevin, Dublin 9, Ireland. For preliminary notice see *Bull. BBS.*, 48.

Sept. BBS. A.G.M. and paper-reading meeting, Wye College, Kent. Local Sec.: Dr. M.A.S. Burton, Paris House, East Malling, Maidstone, Kent ME19 6AU. For preliminary notice, see *Bull. BBS.*, 48:14.

Nov. BBS. Taxonomic Workshop. University of Manchester. Local Sec.: Dr. S.R. Edwards, The Herbarium, Manchester Museum, The University, Manchester M13 9PL. For preliminary details see *Bull. BBS.*, 48:14.

1988

Sept. 12th. CEBWG Meeting. Liblice (Village near Mělník), Czechoslovakia. For further details, see above.

THE INTERNATIONAL ASSOCIATION OF BRYOLOGISTS publishes *The Bryological Times* every two months, the *Bulletin of Bryology* twice a year and the *Advances in Bryology* every two years. 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 authors.

For details regarding members 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 the 1st of December at the latest. Items for the regular columns should be sent direct to the column editors, whose names and addresses will be found in *Bryol. Times*, 31:9, 1985.

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