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SOME RECOMMENDATIONS FOR THE CITATION OF SYNONYMY, TYPES AND SPECIMENS

By J.-P. Frahm & S.R. Gradstein

"Recommendations deal with subsidiary points, their object being to bring about greater uniformity and clearness" (Preamble International Code of Botanical Nomenclature).

LOOKING AT TAXONOMIC PUBLICATIONS, one may find several different ways in which names of species, types, synonyms and specimens are listed and cited. In some cases, editors of journals or Floras have specific preferences - among the journals most notably The Bryologist - but a somewhat standardized method is generally lacking, as for instance is used in the citation of literature. In view of the importance of uniformity and standardization in scientific work, we give some guidelines which we hope will help in improving the quality and clarity of taxonomic papers.

The recommendations presented here are largely the fruit of our own experiences in writing and reviewing taxonomic papers. Much of it is probably known and common practice to a number of our colleagues. We hope, nevertheless, that colleagues will find these recommendations useful when drafting their manuscripts or editing papers for publication. We would certainly welcome suggestions for improvement which might be sent to us or to the Editor for publication in these columns.

1. Citation of synonymy and types

While the full citation of correct names poses no problems, at least in mosses where most authors seem to follow Index Muscorum, little uniformity exists in the handling of basionyms and synonyms. Some authors list them alphabetically, others chronologically, according to types, or just randomly. As it is particularly desirable to distinguish between names that are based on the same type ("homotypic synonyms" = "nomenclatural synonyms")

and names based on different types ("heterotypic synonyms" = "taxonomic synonyms"), we recommend that synonyms are listed in paragraphs according to their nature, in the following sequence (see example):

1. Correct name.
2. Basionym of the correct name.
3. Combinations derived from the basionym (same epithet), in a chronological sequence.
4. Other names based on the same type, but different epithets (superfluous names), if they exist.
5. Type.
6. Heterotypic synonyms in alphabetical order, for each type as under 1-5.

As opposed to short citations for specimens examined, we would recommend that the citation of the type should be as detailed as possible, giving the original text of the label or the type description in quotation marks. Translation of the original text should be avoided or be given in brackets following the original. The official herbarium abbreviation, according to Index Herbariorum, should be added in brackets; if no official abbrevia-

tion exists, cite in full. Only herbaria, from which material has been examined, should be cited, otherwise add "not seen". Exclamation marks for specimens examined should be avoided. The type citation should be given under "Type:", "Lectotype:" or "Syntype(s):", as appropriate and for newly-chosen lectotypes, "(nov.)", should be added, otherwise reference to the first selection should be given, e.g. "(Evans 1908)". In the case of a lectotype the citation of former syntypes may be omitted, for these are of no further nomenclatural interest. Citations of paratypes may also be omitted. To differentiate the holotype from isotypes, the herbarium, in which the holotype is kept, should be followed by "holo".

If several types exist and no lectotype is chosen, authentic collections should be cited under "Syntypes:". In this case it may be of interest to indicate in which herbarium the original set of syntypes is held and in which herbaria duplicates ("Isosyntypes") are kept, the latter to be indicated by "iso" behind the herbarium abbreviation.

Example

(Correct name:)	<i>Acrolejeunea aulacophora</i> (Mont.) Steph. <u>Bot. Jahrb.</u> , 20: 317 (1895).
(basionym:)	<i>Phragmicoma aulacophora</i> Mont. <u>Ann. Sci. Nat. Bot.</u> , 2 (19): 259 (1843). <i>Lejeunea aulacophora</i> (Mont.) Steph. <u>Hedwigia</u> , 29: 133 (1890).
(homotypic synonyms:)	<i>Marchesinia aulacophora</i> (Mont.) Kuntz <u>Rev. Gen. Pl.</u> , 2: 836 (1891). Type: S. Pacific, Gambier Is., Mangaréva, "cum <i>Fru-lania deloti</i> N. et M. et <i>Calymperes molucensis</i> promiscue ad radices arborum crescit", <u>Hombron</u> s. n. (PC-Mont. holo; G, PC, S, W, YU).
(Heterotypic synonym:)	<i>Acrolejeunea renauldii</i> (Step.) Bonner <u>Index Hep.</u> , 1 (2): 21 (1962) (syn. nov.). <i>Lejeunea renauldii</i> Steph. <u>Hedwigia</u> , 27: 7 (1888). <i>Ptychocoleus renauldii</i> (Steph.) Steph. <u>Spec. Hep.</u> 5: 26 (1912); Jones (1954: 402); Bischler (1965: 431). Lectotypus (nov.): Reunion, <u>Rodriguez</u> s. n. 1887 (?) ex hb. Renauld. 63 (G).
(reference:)	
(note:)	Renauld 63 is chosen as the lectotype from among five authentic collections because it is the only fertile specimen.

(continued from page 1)

Short notes (a few lines only) on names or type specimens may be inserted conveniently following the type citation.

For each name relevant additional literature may be inserted directly following citation of the name by author (year:page). But excessive citations should be avoided and be restricted to taxonomically or nomenclaturally important works.

2. Citation of Specimens

Horton (J. Hatt. Bot. Lab. No. 53; 385, 1983), with whom we agree, has spelled out the following purposes for listing specimens examined; (i) to document the localities indicated on distribution maps, as an explanation for dot maps or as a completion for maps showing ranges; (ii) to give an indication of the nature and total number of specimens examined upon which the description and the species concept is based; and (iii) to facilitate the loan and re-examination of specimens or part of them. She pointed out, however, that the amount of space in a publication is often too small for these purposes and the amount of time consumed in compiling all records is very large. Therefore, in some cases, she only cited the number of specimens examined from each herbarium.

Example

COLOMBIA: Sierra Nevada de Santa Marta, Rangel 892 (U); Bogotá, Guadalupe, Lindig s.n. (PC, H-BR, S). PERU: Carabaya, Wedell s. n. 1848 (NY, S); Dep. La Libertad, Quiruvilca, Hegewald 5979 (hb. Frahm). MEXICO: BM (5), H (7), B (4), FH (7), NY (20), S (6).

The Bryologist recommends contributors to cite only "representative" specimens. But it is sometimes difficult to decide what is "representative" and moreover, neither the number of specimens studied, nor documentation for the localities can thus be given. Therefore

we suggest the following procedure.

- (i) Full citation of specimens examined when (a) there are less (or a few more) than 5 records per country or region; (b) there are new records; (c) the specimens have been revised to avoid taxonomic confusion.
- (ii) In all other cases the method of Horton may be followed, i.e. citing for every country only the number of specimens per herbarium, to give an impression of the quantity of records. In this way, we believe, most of the aims cited above are fulfilled.

Another problem is to differentiate between locality names and collector as well as collection number and year. As geographical names and collectors' names can sometimes be difficult to distinguish, they might be differentiated by using different typography, viz. italics or underlining for the collector and collection number. Collection numbers should also be underlined or be in italics comparable to the name of the collector to avoid confusion with the year of collection. When no collection number is given, for clarity, "s.n." should always be cited. "Leg." or "coll." may be omitted.

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A Letter to the

GLOSSARY COMMITTEE

A COMPILATION of a bryological glossary is a most useful presentation to all bryologists, and non-bryologists, especially when it is multi-lingual, as scheduled by the Committee (Bryol. Times, 23: 9).

I am glad to see its progress, but I would like to suggest that the Committee pay careful attention to the fact that terminology belongs to the philosophy or interpretation of individual research workers. Also various terms are part of bryological tradition, with a long history, reflecting various thoughts on the bryophyte structure and life.

It would be desirable to consider a "non-strict" presentation of the Glossary, leaving "flexibility" for some terms, especially those with long historical background. That should yield more room for further development of scientific thought on bryophytes (see for example, my recent studies of the elatrophore in the Hepaticae (Bryologist 81: 404) and the outgrowth of female involucre into the thallus structure in the Metzgeriaceae (Bryologist 71: 102; 76: 566; Proc. Bryol. Soc. Jap. 3: 92). I believe this is especially important because this Glossary is to be presented by an IAB Committee, not on a personal basis, like a glossary at the end of a book. Also, it should be remembered that bryological terms are not as intricate as those of some other fields of botany, such as mycology and algology.

One last point, citation of a reference for recently-discussed older terms and newly-described ones will be a useful addition to the Glossary. The Glossary should be of a high scientific standard and be of general use, with its multi-lingual approach and IAB affiliation.

Y. Kuwahara, 10-2139, Mii-machi, Kurume, Fukuoka, 830 Japan.

Deaths

Pater Fintan GRETER, OSB, on May 14, 1984.

THE DOYEN OF SWISS BRYOLOGY passed away at the age of 85, preparing a catalogue of the hepatics of the Central Swiss Alps for publication. His thesis *Die Laubmoose des obern Engelbergertales*, Stiftsdruckerei Engelberg, 312pp., 1936, is one of the first thorough studies in alpine moss ecology. The little time he had beside his monastical duties and his charges as a natural science teacher at the monastery High School, was devoted to bryological field work. P. Fintan was an excellent connoisseur of alpine bryophyte habitats and a collecting tour with him was always most stimulating, instructive and an enchantment. We owe him many discoveries in Swiss bryofloristics. His well-kept herbarium will remain in the Natural History collections of the Benedictine monastery of Engelberg. P. Fintan was among the founding members of the Swiss Bryological and Lichenological Society.

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EXCHANGE AND MART

FOR SALE: Bryological library, rich in 19th and 20th century works: also complete runs of some bryological journals.

All correspondence to Prof. O. Martensson, Inst. of Taxonomic Botany, P.O. Box 541, S-751, 21 Uppsala, Sweden, who will gladly send on loan a list of titles to any serious enquirer.

Recent Studies of Contact Dermatitis to *Frullania*
in Portugal

By C. Sérgio* and S. Gonçalo**

IN PORTUGAL, several cases of professional contact dermatitis to *Frullania* sp. have been reported in the last two years. These may be particularly frequent in rural workers. The clinical manifestations were erythema, scaling, swollen vesicles and itching localized in light-exposed areas or around the waist; less frequently they were generalized. The duration of the symptoms varied from 1 to 18 years.

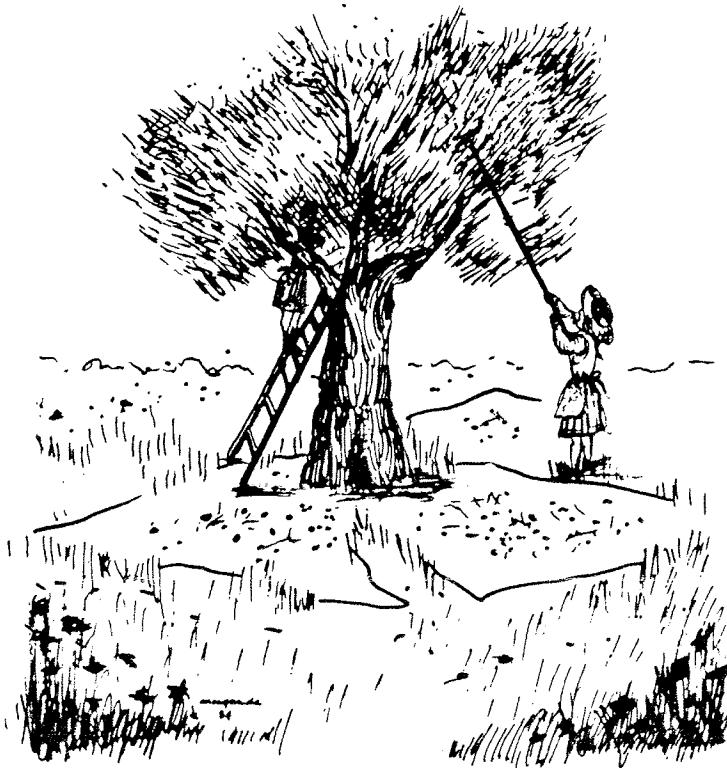


Fig. 1. Traditional methods of olive-picking in Portugal.

The lesions appeared between November and April after olive picking which, in Portugal, is frequently by traditional methods (Fig. 1), or after pruning. *Frullania* ssp., and in particular *F. dilatata* is a very common species on *Olea europaea* in Mediterranean Atlantic areas, but is less widespread in Mediterranean xeric climates, such as the southern part of Spain. Patch tests to *Frullania dilatata* and *F. tamarisci* were positive.

The detailed distribution of *Frullania dilatata* and *F. tamarisci* is being investigated as part of the mapping project of European bryophytes. At the moment we have concluded the mapping of *F. dilatata* in Portugal on a 10 x 10 km quadrature UTM which involved examining 300 specimens, 25% of which were collected from *Olea europaea*. When considering distribution it is important to remember the evident sensitivity of *F. dilatata* to SO₂, leading to its absence above 60 µg/m³ at industrial and urban areas of the Tagus estuary region. So all the integrated studies are pertinent.

Portugal's climate favours the growth of *F. dilatata*, which in turn favours the excellent phorophyte *Olea europaea*. Here, traditional olive-picking methods, negligible polluted areas and sunshine make us believe *F. dilatata* photosensitive dermatitis may be more frequent than previously reported.

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TECHNIQUES NOTEBOOK

A STANDARDIZED METHOD FOR
CULTIVATING BRYOPHYTES

By

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THERE ARE NUMEROUS METHODS available for culture of bryophytes. General methods especially for experimental taxonomy, have been described by Richards (1948), Berrie (1951), Pringsheim (1951), Schelpe (1953), Allsopp (1957), Ward (1960), Hatcher (1965), Prat (1965), Friess (1969), Miller & Ambrose (1976), Iwatsuki (1979a,b), Kawase (1980), Oishi (1980, 1981) and Sargent (1981) while Iverson (1957), Udard (1957a,b, 1958), Iwasa (1963), Forman (1964), Szweykowski & Krzakowa (1969), Muraoka (1971), Olarinmoye (1975), Hirano (1979), Hughes (1979) and Shiono (1979) have made special recommendations for dealing with particular taxa. For methods of growing *Sphagnum* see Hurel-Py (1949), Rudolph (1963a,b, 1964, 1978), Bogdanov (1976) and Giller (1978).

Other authors have dealt with aseptic culture methods e.g. Fries (1954), Matzke (1964) and Hintikka (1972). Methods for the cultivation of spores, gemmae and protonemata have been published by Geldreich (1948), Miller (1964), Naef & Misset (1974), Egunyomi (1978), Field (1978), Naef & Simon (1978) and Tripathi (1978). Special attention has been paid to alteration of the culture medium by Basile (1964) and Bopp et al (1964), while problems of nutrition have been considered by Burkholder (1959), Klein & Bopp (1971) and Basile (1975).

Although this list is far from complete, or even representative, it indicates that the culture of bryophytes seems to be rather complicated and problematical. The problem is that there are as many different methods as there are authors, each using different holders such as test tubes, Petri dishes, Erlenmeyer flasks, plastic boxes or flower pots, and a variety of substrates such as agar, liquids, sand, peat, natural soil or plastic balls, under different conditions, e.g. in the open, in climate-chambers or phytotrons, with controlled or natural light, the addition of nutrients or not and so on. The disadvantage of many methods is that they are hardly reproducible and as they vary so much, the results, especially for experimental taxonomy, are not comparable.

(continued over)

Column Editor Janice M. Glime.

[Techniques Notebook continued]

In Duisburg during recent years, several methods described in the literature have been practised with varying success. The methods were either easy to carry out, but in most cases did not keep the bryophytes alive for a long period, or they were time-consuming, requiring substrate sterilization, washing sand with HCl or preparing nutrient solutions. Stimulated by many failures, we have developed a method which allows one to keep bryophytes in culture for several years successfully. The aim was not to add another method to the many already described, but to get an easy method which could be reproduced by other people with a minimum of time, which is standardized to allow comparisons, and which should produce satisfactory results.

The following is the method we advocate.

The bryophyte to be cultivated is placed in a growth chamber which consists of a transparent plastic box about 15 x 15 x 7 cm. or larger, such as a container used for storing food. The spectral transmission may be different according to the plastic used, but seems to have little importance except for physiological studies. The absorption maximum in the Duisburg boxes is at 304 nm and has therefore virtually no influence on the cultivated plants. Whitish plastic boxes which reduce the light intensity can be used for the cultivation of bryophytes for mitotic studies to produce etiolated shoots. As the boxes are kept closed, this guarantees a constant high humidity. This so-called "saturated" atmosphere can be measured by an electronic psychrometer as 85% at the tips of the plants. However, in combination with the other factors used here, the plants keep their natural habit and do not show hygromorphic growth. Furthermore, closed storage avoids contamination with algae, fungi or other bryophytes. Especially in clima-chambers or even phytotrons, closed boxes seem to be essential as the temperature, and/or humidity, is controlled by an enormous exchange of air, which is not tolerated by bryophytes.

As a substrate, clean sand Merck, 1177 available from the chemical industry is used; it needs absolutely no pre-treatment such as washing or sterilizing. This sand has the advantage that it has a constant diameter of 110-330 μm , is neutral (pH 7), has a good water-holding capacity, is practically sterile and simulates natural conditions for the plants. The best procedure is to fill the boxes in such a

way that the surface of the sand is inclined so that excess water can run off. All organic substrates such as peat or humic soil are a good medium for fungi, and even when sterilized, contamination can occur after a longer or shorter period. Self-preparation of sand is time-consuming and requires washing in HCl, sterilizing, washing in water and sieving, and is less practical than using purchased sand.

For a successful culture, a pre-treatment of the bryophyte is necessary. To avoid contamination with fungi, the bryophytes are dipped into Hydroxichinolinsulfat [250 mg/l 8-hydroxy-5-quinoline sulfonic acid, $\text{HOC}_6\text{H}_2(\text{SO}_3\text{H})\text{N}:\text{CHCH}:\text{CH}:\text{H}_2\text{O}$] for some seconds. This chemical is available in pharmacies under different names (in western Germany as "Chinosol") and is used as treatment for sore throats, or in gardeners' shops, where it is sold for treating seeds against fungi. When sold as tablets, it has to be dissolved in distilled water to the appropriate concentration. If the bryophytes should be infected later on by fungi, this same solution can be sprinkled over the plants.

To avoid contamination from animals living in the bryophyte tufts, the latter are dipped secondly in a solution of Oxydemeton-methyl (2 ml/l of the concentrated solution containing 250 g/l). This chemical, which can also be bought in gardeners' shops, is used as a biocide against animal parasites on plants and will prevent bryophytes from being eaten by beetles as well as protect the substrate from digging worms. This chemical is available from Bayer as "Metasystox". After this pre-treatment, the plants are imbedded in sand, with their stems and leaves in contact with the water in the substrate. Single shoots cultivated on their own give the best results. Single shoots, from living specimens sent by airmail in plastic bags, grown in this way produced small tufts within a short period. If shoots are laid flat on the sand, acrocarpous mosses produce frequent erect branches from leaf axils. Large mats or tufts are more difficult to keep.

Only a weak nutrient solution is used, as generally conditions of good nutrition make more problems than a nutrient-poor solution or conditions lacking nutrients. When growing tufts or mats of bryophytes, the addition of extra nutrients is not necessary, for they already contain enough organic material. Single shoots grow for a while and produce new shoots without additional nutrients,

apparently from the organic contents of the lower stem parts. When the plants become yellowish, a highly-diluted nutrient solution can be added. Knopsolution diluted 10:1 was used at first, but this takes time to prepare and contains no trace elements. Thus ready-made solutions available for hydro-cultures of higher plants in Europe under the name "Substral", in a dilution of 0.7 ml/l, was found to be quite satisfactory.

In open cultures, e.g. as in open boxes or flower pots filled with sand or peat, the evaporation is so high that nutrient salts crystallize at the tops of shoots, forming small crusts which look like imperfect lichens and damage the plants. This is, of course, related to the frequency with which the bryophytes are watered, but it can happen also with dilute solutions.

The temperature at which the plants are grown has not so much importance. The records for optimal culture vary in the literature between 5° and 25°C, mostly between 10° and 20°C. In Duisburg 15°C was used for both temperate and tropical mosses in clima-chambers. Without the opportunity to use a clima-chamber, high temperatures should be strictly avoided, especially beside windows and during the night, for dissimulation also rises with the temperature.

Light intensity may also have a broad range. The compensation point for bryophytes lies between 300 and 700 Lux, or 1,000 Lux in photophilous species; the maximum assimilation rate lies between 2,000 and 4,000 Lux in skiophilous species and 16,000 - 40,000 Lux in photophilous species. Thus a light intensity of 2,000 - 4,000 Lux is appropriate. In Duisburg a light intensity of 3,000 Lux with a 12-hour dark period is used. If no luxmeter is available, the measurement of light intensity can be done with an exposure-meter or camera with built-in exposure meter. The exposure-meter or camera should be adjusted to 50 ASA and 1/30 sec. when f/2 corresponds to 500 Lux, f/2.8 to 1,000 Lux, f/4 to 2,000 Lux, f/8 to 8,000 Lux, and so on.

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[Techniques Notebook continued]

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- Cryptogamie. Bryol. Lichen., 5 (1-2): 1-238, 1984.
- J. Bryol., 13 (1): 1-151, 1984.
- Proc. Bryol. Soc. Japan, 3 (9): 137-154, 1983; 3 (10): 155-172, 1984.
- Taxon, 33 (2): 169-374, 1984.

DUE SUMMER 1984

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DIARY

BBS = British Bryological Society; CEBWG = Central and East European Bryological Working Group; IBC = International Botanical Congress; SBLS = Swiss Bryological Society and Lichenological Society.

1984

Sept. 15-16. BBS. Paper-reading Meeting and AGM. University of Birmingham. Local Sec: Dr. D. C. Lindsay, 177, Grove Road, Sparkhill, Birmingham, B11 4DD. For details, see Bull. BBS, 44.

Sept. 28-30. Lamar, Pennsylvania. 9th A. Leroy Andrews Foray. For further information see Bryol. Times, 26:8.

Nov. 17-18. BBS. Taxonomic Workshop. University of Keele. Local Sec.: Dr. R. Murphy, 73, St. Christopher Ave., Penkull, Stoke-on-Trent, ST4 5NA. For details, see Bull. BBS, 44.

Nov. 23-25. Bryological Workshop. Duisburg and Robertville. Organizers: Profs. R. Düll and R. Schumacker. See Bryol. Times, 26:9 for further details.

For details of BBS local Meetings and Bryophyte Courses at Field Studies Council Centres, see Bull. BBS, 43: 15.

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

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

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ITEMS FOR THE NEXT ISSUE to be with the Editor, Dr. S.W. Greene, Department of Botany, The University of Reading, London Road, Reading RG1 5AQ, Berkshire, England, (Telex 847813 RULIB) by 1st October, at the latest. Items for the Techniques Notebook should be sent direct to Dr. Janice M. Glime, Dept. of Biological Sciences, Michigan Technological University, Houghton, Michigan 49931, U.S.A.

1985

Feb. 17-18. SBLS. Identification days. Botanical Institute, University of Zürich. Further details from Dr. K. A. Ammann, Syst.-Geobot. Institut, Altenbergrain 21, CH-3013, Bern, Switzerland.

April 17-24. BBS. Chichester, West Sussex. Spring Field Meeting. Local Sec.: Mr. R. C. Stern, 14, Cherry Avenue, Yapton, Arundel, West Sussex, BN18 0LB. For details see Bull. BBS, 44.

April 20-21. SBLS. Valais Central (around Sion) [Central Wallis better.] Annual Assembly with paper-reading sessions and excursions. Further information from: Dr. K.A. Ammann, Syst.-Geobot. Institut, Altenbergrain 21, CH-3013 Bern, Switzerland.

July 4-10. Brighton, England. Third International Congress of Systematic and Evolutionary Biology. Bryophyte Symposium in collaboration with the BBS. For preliminary details see Bryol. Times, 27:8.

July 28-3 Aug. BBS. Bavarian Alps. Summer Field Meeting. Local Sec.: Prof. Dr. R. Düll, Lehrstuhl f. Biologie (Botanik), D. Pädagog. Hochschule, 4100 Duisburg 1, Lotharstrasse 65, B.R.D. Preliminary details in Bull. BBS, 44.

Aug. 5-10. IAB. Budapest and Vácrátót. Conference on Bryocology. For 1st circular, see Bryol. Times, 24:7.

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

Aug. 12-14. CEBWG. Eger, Hungary. 4th Biennial Meeting. For 1st circular, see Bryol. Times, 24:7.

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

Sept. AETFAT. St. Louis. Proposed mini-symposium on African bryophytes. For further information, see Bryol. Times, 23:8.

September BBS. Paper-reading Meeting and AGM. National Museum of Wales, Cardiff. Local Sec.: Mr. A.R. Perry, Dept. of Botany, National Museum of Wales, Cardiff CF1 3NP. Preliminary details in Bull. BBS, 44.

Nov. 2-3. BBS. Taxonomic Workshop, Gilbert White Museum, Selborne, Hants. Local Sec.: Dr. J.E. Chatfield, The Gilbert White Museum, The Wakes, Selborne, Alton, Hants GU34 3JH. For details see Bull. BBS, 44.

1986

Spring, BBS. Norfolk. Spring field meeting. Local Sec: Mr. R. Stevenson, 111, Wootton Road, King's Lynn, PE30 4DJ. Preliminary details in Bull. BBS, 44.

Summer, BBS. Scotland. Summer field meeting. Local Secs.: Mr. D.G. Long, Royal Botanic Garden, Edinburgh EH3 5LR and Mr. G.P. Rothero, Benmore Centre, By Dunoon, Argyll, Scotland. Preliminary details in Bull. BBS, 44.

1987

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