ASSOCIATION NEWS

Towards IAL5 – Tartu (Estonia), 16–21 August 2004

The IAL5 Local Organising Committee is glad to welcome about 250 registered participants in Tartu in a few weeks! We are expecting lichenologists from 37 countries from Europe, Asia, North- and South-America, Africa and Australia.

The scientific programme of the congress "Lichens in Focus" and the detailed schedule have been settled by now and are presented on the internet (**http://www.ut.ee/ial5/sc_pr/det_sched.html**). The abstracts of all contributions are also publicly available (**http://www.ut.ee/ial5/sc_pr/sess.html**). The IAL5 Scientific Committee has accepted 67 lectures in six oral sessions; 10 oral presentations in three Discussion sessions and 158 posters in six poster sessions.

Twentyfour persons plan to attend the pre-symposium excursion to the mainland and the western islands of Estonia (5 days); 32 persons – the post-symposium excursion to the eastern and northern parts of Estonia (2 days) and 21 persons – the post-symposium excursion to the southern part of Estonia (1 day).

See you soon in Tartu!

Tiina Randlane, Tartu, Secretary of the IAL5 Local Organising Committee

NEWS

The Spanish Lichen Society (SEL) is organizing an excursion to 'Sierra de San Lorenzo' (La Rioja, Spain) located in the north of 'Sistema Ibérico' during 7-10 september 2004, to collect lichens in different habitats. *Fagus sylvatica, Quercus pyrenaica* and *Quercus ilex* oldgrowth forests, also terricolous and saxicolous rock outcrops from 600 m to 2300 m altitude will be checked. A visit to the Yuso and Suso Monasteries is planed where the first manuscript in Spanish and Catalan languages were found in the X century AC. The Christian road to Santiago for pilgrims is 20 km away, too. At the end of this excursion the 1º Spanish Lichenological Meeting will be celebrated. Further information by e-mail: *isabel.martinez@escet.urjc.es*, *arburgaz@bio.ucm.es*, or at: **http://www.ucm.es/info/seliquen**

Isabel Martinez, Mostoles

CLERC, P. (2004) The lichenized fungi of Switzerland - Bibliographic catalogue including data on species distribution and ecology. *Cryptogamica Helvetica*, 19, p. 1-320. Price: 96.- CHF / 64 Euro (postage extra). Ordering information**:** Geobotanisches Institut ETH Zollikerstrasse 107 CH-8008 Zürich Switzerland Email: lilo.koenig@env.ethz.ch FAX: ++41 1 632 14 63

A checklist of the lichenized fungi so far reported from the literature for Switzerland is presented. For each taxon information on synonyms, on the topographical distribution (cantons and natural regions), on the vertical distribution (vegetation zones) and on substrate preference is given. The list of publications on which basis the taxa are accepted for Switzerland is given. At present 1660 species and 19 infraspecific taxa (15 subspecies, 3 varieties and 1 forma) in 273 genera are known to occur in Switzerland. Moreover 201 lichenized taxa that were mentioned for Switzerland but for diverse reasons not accepted in this checklist are included. Non lichenized lichenicolous fungi are not included. Altogether 4956 synonyms are listed. Three new combinations are proposed: *Diplotomma hedinianum* (H.Magn.) P.Clerc, *Lichinella heppii* (Müll.Arg.) P.Clerc & C.Roux and *Porpidia turgida* (Ach.) C.Roux & P.Clerc.

Phillipe Clerc, Genève

Bioactive compounds from lichens

The purpose of a 4 years project in the European "Cooperation in the Field of Scientific and Technical Research" (COST) programme is aimed at an investigation of bioactive properties of lichen compounds. Only a very limited number of lichen substances has been screened for their biological activities and their therapeutical importance in medicine. Certainly, this is due to the difficulties encountered in identification, collection of bulk quantities, and the substantial isolation of pure substances for identification and testing. Recently, opportunities for bypassing some of these former

difficulties have arisen as new techniques have been introduced for testing (HTS), for cultivation (biotechnological production), for extraction of focussed compounds (dereplicative chromatographic techniques), and for synthesis of natural products or their derivatives (classical chemistry or SPOS). Lichenologists and chemists from Austria, France and Iceland work together to find novel active metabolites (including hemisynthetic derivatives) which could serve as lead compounds particularly in the anticancer research field.

For more information please contact Joël Boustie, (Co-ordinator for project D28/005/03, **http://cost.cordis.lu/src/action_detail.cfm?action=D28**), e-mail *Joel.Boustie@univ-rennes1.fr*, Laboratoire de Pharmacognosie et de Mycologie, Université de Rennes I - U.F.R.. Sciences Médicales et Pharmaceutiques, 2, Av. du Professeur Léon Bernard 35043 Rennes Cedex – France, tel 02 23 23 48 18 - fax 02 23 23 47 04. **Http://www.aferp.univ-rennes1.fr/aferpnouveau/index.htm,** Equipe de Recherche: Synthèse et extraction de molécules à visée thérapeutique **http://www.upres2234.univ-rennes1.fr**

Joël Boustie & Sophie Tomasi, Rennes

Personalia

Teuvo Ahti (Helsinki)visited Greifswald and Berlin to work on patterns of world distribution of species of Cladoniaceae with **Birgit Litterski** and **Harrie Sipman**. In May 2005 he participated in Tuckerman Workshop in Nova Scotia and also visited herbaria in Toronto and Winnipeg and collected lichens in Manitoba. In June he shall participate in an expedition to Noatak Reserve, NW Alaska, hoping to clarify the taxonomy of some Amphi-Beringian Cladoniae.

Anja Amtoft (USA) M.Sc. student of **Dick Harris**, **Alexandra Bachran** (Germany) Ph.D. student of **Burkhard Büdel**, and **Damien Ertz** (Belgium) Ph.D. student of **Paul Diederich** and **Emmanuël Sérusiaux**, have visited the Lutzoni lab (Duke University) as part of the Assembling the Fungal Tree of Life (AFTOL) project. They generated sequence data for this collaborative project as well as for their respective thesis on *Dermatocarpon*, Peltulaceae, and Roccellaceae. All of them received training in phylogenetic methods and molecular techniques during their visit. The AFTOL project is now in its second year and the Lutzoni lab has several openings for graduate students or postdoctoral lichenologists interested in visiting Duke University (for a minimum of three months to a maximum of one year) to receive training in molecular phylogenetics and participate in the AFTOL project. Funding is available to cover accomodations and lab work.

André Aptroot (CBS), **Laurens Sparrius** (The Netherlands) and **Kevin Hyde** (Hong Kong University) will make a collecting trip in the surroudings of the Mushroom Research Centre in Chiangmai (Thailand), and Hanoi (Vietnam). They will be accompanied by Dr. Saisamorn Lumyong (CMU) and Dr. **Mai Thi Hang** (Hanoi University). The stay in Vietnam includes teaching at a Fungal Taxonomy Workshop.

Frank Bungartz recently finished his PhD at Arizona State University under the supervision of **Thomas H. Nash** III. His dissertation is entitled "The lichen genus *Buellia* de Not. in the Greater Sonoran Desert Region: saxicolous species with one-septate ascospores." This taxonomic revision reports thirty-one saxicolous species of *Buellia* s.l. with one-septate ascospores from the Sonoran Region. They are distinguished by thallus morphology, exciple anatomy, spore ultrastructure, secondary chemistry, ecology and distribution. The dissertation is available in PDF format from the author. Frank has left Arizona State University and started a PostDoc at the Botanische Staatssammlung in Munich, Germany. He will work on a revision of the Global Information System for Lichenized and Non-Lichenized Ascomycetes (LIAS), focusing on terminology and character definitions, which will be made available online as an interactive glossary. Frank will continue his taxonomic work on *Buellia* and as an co-editor for the second volume of the Sonoran Desert Flora. His current address is: Dr. Frank Bungartz, Botanische Staatssammlung München, Menzinger Straße 67, D-80638 München, Germany, e-mail: *bungartz@bsm.mwn.de*, phone: +49 89 17861 253, fax: +49 89 17861 193.

Paolo Giordani successfully defended his doctoral thesis “Epiphytic lichens as biomonitors of the environmental alteration: the influence of ecological variables on lichen diversity” at the University of Trieste. Giordani was supervised by **Pier Luigi Nimis**. Paolo is actually continuing his study on this topic, thanks to a post-doctoral position at the University of Genova. Contacts and collaborations with other lichenologists interested in lichen ecology are warmely welcome.

Anna Guttova (Slovak Academy of Sciences, Bratislava) spent 6 months at the University of Siena in the framework of a NATO-CNR senior fellowship supervised by **Stefano Loppi**. The aim of the programme was to study and select methods for numerical interpretation of environmental quality based on lichen diversity, and to participate in the studies on physiological status of model lichen thalli and ammonia accumulation.

Scott LaGreca has left Harvard University (Cambridge, USA) and has taken the position of Curator of Lichens at The Natural History Museum (London, England). Scott is looking forward to developing the outstanding collections at TNHM, as well as continuing his research on Ramalina and Lecanora.

Esteve Llop, who completed his Ph.D. with **Néstor L. Hladun** (Barcelona, Spain), has joined the lichenological team at the University of Bergen (Bergen. Norway) from January 2004, where he will perform his 2-year postdoctoral research project in cooperation with **Stefan Ekman**. The main goal of this project is a taxonomic revision of the genera *Bacidia* and *Bacidina* in the Mediterranean area based on morphological and molecular characters. Esteve can be contacted at *esteve.llop@bio.uib.no*.

Harrie Sipman (Berlin) participated in fieldwork in Costa Rica in March 2004, organised so well by **Robert Lücking** for his TICOLICHEN project. Contact with several lichen enthausiasts in Iran lead to the production of a web-key to the lichen genera of Iran (**http://www.bgbm.org/Sipman/keys/Irangenera.htm**). A checklist for this country, in cooperation with a. o. **Mark Seaward** is submitted for publication. In cooperation with Mark as well as **Volker John** and **Luciana Zedda** a checklist for Syria was prepared, which is now in press. Under his co-supervision **Nicole Noeske** is preparing a thesis on epiphytic lichens and bryophytes in a research site in southern Ecuador, comparing primary forest and degeneration stages. **Jeanette Bohnke** finished her masters thesis on the family Parmeliaceae in the NP El Imposible in El Salvador.

Orvo Vitikainen (Helsinki, H) will retire on pension from his position as Curator of lichens on 1st September. He will join the "emeritarium" of this institute to continue lichen research so that his contact address remains unchanged. The position will be replaced by another lichenologist.

GET ACQUAINTED WITH IAL5 LOCAL ORGANISING COMMITTEE AND THE SUPPORTING TEAM!

(all members are from the Institute of Botany & Ecology, University of Tartu)

From left to right: Tiina Randlane, Andres Saag, Leili Järva, Inga Jüriado.

From left to right: Piret Löhmus, Lauri Saag, Ave Suija, Ede Leppik, Maarja Nömm

Dr. Tiina Randlane – Secretary of the Committee, associate professor. Subjects of scientific interest: (1) lichen flora of Estonia – composition of lichenized taxa in Estonia (ca 950 species recognized today), their distribution, ecology and protection; analysis of the whole lichen flora; see **http://www.ut.ee/lichens/fce.html**, (2) systematics and phylogeny of cetrarioid lichens (fam. *Parmeliaceae*, *Ascomycota*) – the informal group includes ca 140 species from the whole world; phylogenetic affinities and delimitation of 24 genera based on the cladistic analysis; see **http://www.ut.ee/lichens/cetraria.html**, (3) theoretical problems of systematics and phylogenetics; usage of the botanical nomenclature; position of lichenized fungi in the system of Ascomycota.

Dr. Andres Saag – Vice-Secretary of the Committee, senior researcher. Subjects of scientific interest: (1) systematics and phylogeny of cetrarioid lichens (fam. *Parmeliaceae*, *Ascomycota*); (2) lichen flora of Estonia – databasing of the herbarium of Estonian lichens in TU (ca 30 000 specimens; see **http://www.ut.ee/lichens/index.html**); distribution patterns of lichenized taxa in Estonia, (3) theoretical problems of systematics and phylogenetics; usage of the cladistical analysis; databasing of biological information.

Dr. Leili Järva – senior laboratory assistant of the lichen herbarium of TU (ca 70 000 specimens); has compiled "List of taxa kept in TU"; see **http://www.ut.ee/lichens/index.html**

M. Sc. Inga Jüriado – Ph. D. student; works on the project: " Factors influencing the species richness and distribution of lichen flora in Estonian forests ".

M. Sc. Piret Lõhmus – Ph. D. student; works on the project: “Species richness and distribution of lichens in forested areas depending on substrata”.

M. Sc. Lauri Saag – Ph. D. student; works on the project: "Systematical and ecological analysis of the lichen genus *Lepraria* and allied taxa"

M. Sc. Ave Suija – Ph. D. student; works on the project: "Systematics of some lichenicolous fungi growing on parmelioid lichens".

Ede Leppik – bachelor student; works on the project: "Epiphytic lichen flora of wooded meadows of saaremaa (Oesel)"

Maarja Nõmm – bachelor student; works on the project: " Influence of environmental variables and forest management on the lichen flora of eutrophic paludified forests in Estonia"

Mrs. Kersti Loolaid – Technical assistant of theSecretary

Ms. Evelyn Silvet – Technical Organiser, Frens Conference Services

New members

B. Abbott, Kastri, 22013 Arkadias, Greece

Henry Bekker, La Barara, Gorse Hill Rd., Virginia Water., Surrey ,GU25 4AP, UK

Ursula Bruker, Semmelweis-Strasse No. 9, D-78532 Tuttlingen, Germany

Maria Pilar Estevez Lopez,C/ Santa Brigida 6 30IZQ, 28220 Majadahonda, Spain

Dr. **Sevda Alverdiyeva**, Institute of Botany, ANAS, Baku 370073, Patamdar sh. 40, Azerbaijan Republic

Anna Crewe, Dept. of Ecology and Environmental Science, Umea University, SE-901 87 Umea, Sweden

Damien Ertz, National Botanical Garden of Belgium, Department of Bryophytes-Thallophytes, Domaine de Bouchout, B-1860 Meise, Belgium

Sergio Favero, Dipartimento di biologia Vegetale, Università di Torino, Viale Mattioli 25, 10125 Torino, Italy

Michele D. Piercey-Normore, Department of Botany, University of Manitoba, 505 Buller Bldg, Winnipeg, Manitoba, Canada, R3T 2N2

Susanne Altermann, Ecology and Evolutionary Biology, A 316 Earth and Marine Sciences, University of California, Santa Cruz, California 95064,USA

Kerry Knudsen, 33512 Hidden Hollow Dr., Wildomar, California 92595, USA

Esteve Llop, Department of Biology, University of Bergen, Allégaten 41, 5007 Bergen, Norway

Address changes

Frank Bungartz, Botanische Staatssammlung München, Menzinger Straße 67, D-80638 München, Germany, e-mail: *bungartz@bsm.mwn.de*, phone: +49 89 17861 253, fax: +49 89 17861 193

Katherine Glew, Herbarium, Lichenology, Burke Museum, Box 355325, University of Washington, Seattle, WA 98195, tel. +1-206-725-0433

Per-Gerhard Ihlen, Department of Ecology and Environmental Science, Umeå University, SE-901 87 Umeå, Sweden

Scott A. LaGreca, Herbarium, Department of Botany, The Natural History Museum Cromwell road, London SW7 5BD, U.K.

Fred Rhoades, 602 Briar Rd. Bellingham, WA 98225 USA tel. +1-360-733-9149

Megan Saunders, Department of Botany, Erindale College, University of Toronto at Mississauga, 3359 Mississauga Road North, Mississauga, Ontario, Canada L5L 1C6

REPORTS

Third TICOLICHEN field trip held in Costa Rica

In March 2004, the third and last field trip in the Ticolichen project was held in Costa Rica. The participants (André Aptroot, Robert Lücking, Matthew Nelson, Harrie Sipman, Marie Trest and Susan Will-Wolf), together with their Costa Rican counterparts José Luis Chaves, Loengrin Umaña, Enia Navarro, Ronald Rodriguez and Eduardo Alvarado, spent three weeks collecting lichens all over the country. A very effective schedule was followed: each three days of field work at a biological station in one of the many national parks or forest reserves was followed by three days of specimen drying, preparation, duplication, preliminary identification and databasing at the INBio institute in San José. This permitted lengthy discussion on enigmatic specimens, as well as on other lichenological topics, and allowed taxonomic insights from each other's experiences. Moreover, having studied the freshly collected material right away made for a more efficient collecting the next week.

The focus of this year's trip was on lowland to mid-elevation habitats, as upland habitats had been relatively well sampled earlier. Still, the places visited varied vastly, from coastal/maritime rock and trees on both the Pacific and the Caribbean to rock outcrops at 3500 m (with e.g. two *Umbilicaria* species, a *Neuropogon* species, three *Xanthoparmelia* species and many siliceous crusts), boggy Puya páramo at 2700 m (with e.g. a new lichenized relative of *Multiclavula*), hot and dry lowland calcereous rock (with various *Collema* species), windy ridges with roadside trees (with several Pannariaceae and a *Phaeographis* with large rounded, grey apothecia), lowland rain forest (with e.g. two undescribed *Megalotremis* species), lower volcano slopes with incessant rain from its private cloud (with five or more *Dictyonema* species), cloud forest (pyrenocarp and

Ocellularia area, but also *Trapeliopsis flexuosa*) and even concrete side-walks in the capital (*Endocarpon* dominant, but also *Bacidia*, *Caloplaca*, *Lecania*, *Lecidella*, *Verrucaria* species present).

In all, more than 8,000 specimens (including duplicates) were collected, prepared, and databased. Although already over 1,500 species are known from the country, still dozens of new genus reports were among the material, e.g. *Absconditella*, *Ainoa*, *Calvitimela*, *Euopsis*, *Immersaria*, and *Rimularia*. Of special interest was the abundance of usually foliicolous genera like *Calopadia*, *Echinoplaca*, *Gyalectidium*, *Gyalideopsis*, *Lasioloma*, *Musaespora*, *Sporopodium*, *Tapellaria* and *Tapellariopsis* on trees, fence posts, and even on rock. A very particular site was found at Pilón Biological Station within Tenorio National Park, where cut logs had been exposed to almost constant rain in a pasture for some time (see picture). The still attached bark of these rotten logs was colonized by about 15 different species of *Gyalideopsis*, all with different hyphophore types, including the enigmatic *G. gigantea* with its enormous, tomentose hyphophores.

Obviously, much work remains to be done on the material, but a swift identification of much of the specimens will be concluded within the next 12 months, and description of some of the new species is to be expected soon. If sticking to the project plan, within three to five years, a complete lichen flora of Costa Rica will be published, mainly based on the collections gathered during the Ticolichen field trips, but incorporating other traceable lichen records from the country.

The organizer, Robert Lücking, is warmly thanked for this meticulously planned trip. Everything worked out fine, and in the process we saw lots of characteristic plants and animals as well, varying from a sloth in INBioparque and armadillos and howler monkeys around the huts in Monte Alto to a "freshwater squid" (otherwise only known from Harry Potter the and Lord of the Rings movies) on our plates one evening and 2-3 cm large bull ants on the trees one was about to sample and even larger flagel-scorpions in our bedrooms.

André Aptroot, Baarns

New Literature:

EVA BARRENOS RODRIGUEZ & -SERGIO PEREREZ-ORTEGA (2003) Liquenes de la Reserva Natural Integral de Muniellos, Asturias. KKK Ediciones, Oviedo,. Softbound, 555 pp, 140 colour plates. Price: 30 Euro. Order: http://www.krkediciones.com

This is a guide to the lichens of the Natural Reserve of Muniellos (Spain, Asturias), an area which is important for conservation, being included in the network of reserves of the UNESCO-MAB project.

The preface of Victor M.Vasquez (Director of Environmental Conservation in Spain) is followed by a brief introduction by the Authors. Chapter 2 is a detailed summary in English. Chapter 3 deals with the practical use of the guide, including its basic philosophy and terminology (terms related to ecology and distribution). Chapter 4 (by J.A. Fernandez Prieto) describes the survey area and its main habitats. At this point there is a break: 35 beautiful colour plates of the main habitats of the reserve. Chapters 5 to 7 are dedicated, respectively, to lichen biology, lichen ecology, and to the use of lichens as bioindicators. Here we fly high, well above Asturias: this is a small, compact, clear, treaty

of general lichenology! But chapter 8 brings us down to earth: it describes the lichen-rich habitats of Muniellos. Compared with the previous chapters, this one has the same refreshing effect that a practical lab has on students after hours of theoretical lessons (...the other effect is that of convincing people from abroad, like me, to visit Muniellos). Chapters 9-10 make up more than half of the book. They are devoted to identification. Chapter 9 includes an interesting key to photobionts, plus keys to lichen genera, arranged by growth forms. Chapter 10 hosts the keys to the 450 species known from Muniellos, arranged by genera. Each genus is provided with a detailed description. The dichotomies bringing to species are unusually rich. They often include a synthetic description of every single species, plus notes on their ecology. After the keys, as a transition, there appears a series of 98 colour plates devoted to individual species (i.e. little less than ¼ of the total flora): an elegant pendant to the pictures of habitats, and a useful resource for beginners. The final chapter (nr. 11), contains a glossary of technical terms. Only apparently minor, this chapter is one of the highlights of this book. It includes explanations, often illustrated by neat black-and-white drawings, of no less than 507 terms. As far as I know, this is the best lichenological glossary written in Spanish. Considering the diffusion of this language, this chapter alone, in conjuction with the introductory parts, would be sufficient to make this book important at the international level.

Lichens are broad-ranging organisms: many species occurring in Muniello do occur in other parts of the world. I tried to test the present keys with lichens collected by my students in the Carnic Alps (NE Italy): they worked well.

This bulky book is not written in English, it has more than 500 pages, it contains colour plates, it is expensive to print, it costed years of hard work to the Authors, it has no impact factor. How was its publication possible? Thanks to intelligent politicians. To understand this point, you must able to read the preface, the introduction, and the acknowledegements.

Eva Barreno cited a poetry of Hans Magnus Enzensberger in the introduction, and sent him a copy of the book. The writer thanked her with the following words: "muchas gracias de su monumental estudio sobre los líquenes de Asturias. Evidentemente, es un trabajo de amor!". Enzensberger probably discovered the deep roots of this monumental book. Most lichenologists worldwide associate Eva Barreno to the warm- sunny city of Valencia, where she is teaching as a professor of Botany since 1986. However, Eva, like Sergio Perez-Ortega, one of her brilliant students, co-author of this book, is native from the austere region of Asturias. This work is a homage to their mother/fatherland, to their native country. That it originates from true love is testified by its importance, which goes much beyond the narrow borders of Muniello, Asturias, the Iberian Peninsula, and of Europe.

I warmly recommend the book to all those who are interested in lichens and can read Spanish.

Pier Luigi Nimis, Trieste

Krzewicka, Beata. 2004. The lichen genera *Lasallia* and *Umbilicaria* in the Polish Tatra Mts. Polish Botanical Studies 17. Published, sold and distributed by: W. Szafer Institute of Botany, Polish Academy of Sciences, Lubicz 46, 31-512 Kraków, Poland. 88 pp. ISBN 83-89648-11-3. Price unknown.

A neatly produced treatment of the 21 species of Umbilicariaceae occurring in the highest mountain chain in southern Poland on the border with Slowakia. For each species a

morphological description is given with notes on variation and affinities, distribution, list of exsiccata seen (worldwide), extensive list of specimens. These are illustrated with SEM pictures of thalloconidia, where present, distribution maps for the study area, and diagrams of the main ecological factors of its habitat. In English.

Harrie Sipman, Berlin

Bielczyk, U. (ed.). 2003. The lichens and allied fungi of the Polish Carpathians. An annotated checklist. Biodiversity of the Polish Carpathians vol. 1. Published, sold and distributed by: W. Szafer Institute of Botany, Polish Academy of Sciences, Lubicz 46, 31-512 Kraków, Poland. 342 pp. ISBN 83-85444-28-9. Price unknown.

The Carpathians are a large mountain chain in eastern central Europe, running through Austria, Poland, Slovakia, Hungary, Ukraine and Rumania. In Europe it is second in size only to the Alps. The main, southern, body lays in Rumania, while the northern part includes o. a. the Tatra mountains. The Polish part includes the northern side of the northernmost part, almost 20,000 square km.

The present, neatly produced volume contains a catalogue of ca. 1300 species reported from the area, with literature sources and distribution in the study area. It is divided in 4 parts: presentation of the study area and its lichenological exploration; catalogue of the Polish Western Carpathians, catalogue of the Polish Eastern Carpathians; index to names, incl. synonyms. In English.

Harrie Sipman, Berlin

Bielczyk, U., Lackovičová, A., Farkas, E. E., Lőkös, L., Liška, J., Breuss, O. & Kondratyuk, S. Ya.. 2004. Checklist of lichens of the Western Carpathians. Biodiversity of the Carpathians vol. 1. Published, sold and distributed by: W. Szafer Institute of Botany, Polish Academy of Sciences, Lubicz 46, 31-512 Kraków, Poland. 181 pp. ISBN 83-89648-12-1. Price unknown.

The Western Carpathians are a mountain area on the territory of Poland, Austria, Czech Republic, Slovakia and Hungary. The present, neatly produced volume contains a list of 1817 species recorded for that area, with indication of the countries where they are found, and including synonyms. Added are an introduction with description of the study area and a list of all relevant literature.

Harrie Sipman, Berlin

Ciurchea, M. 1998. Licheni din România. Vol. 1. Ascomycotina: Pyrenocarpi. Published by: Institutul de Cercetari Biologice, str. Republicii nr. 48, 3400 Cluj-Napoca, Romania. 333 pp. ISBN 973-9354-50-5. Price unknown.

An extensive treatment of the Rumanian lichen flora, with species descriptions, synonymy, Rumanian distribution, line drawings of characters, keys. This first volume contains also a general introduction with character descriptions, glossary, systematic arrangement of all

genera, key to the families, in 84 pages. The rest treats the pyrenocarpous lichens, including the orders Dothideales, Pyrenulales, Trichotheliales and Verrucariales, and some groups of unclear systematic position (at that time), Protothelenellaceae, Strigulaceae, Thelenellaceae, Thrombiaceae and the genus Normandina. The work is completely in Rumanian, and the publication of the further volumes has been stopped.

Harrie Sipman, Berlin

REVIEWS

Lichenology since the turn of the millenium

With the upcoming General Meeting in Tartu an interesting period in lichenology will have passed. It might be interesting to review briefly the past years and to see how lichenology developed as a whole since the past IAL conference in Barcelona. Lichenology, in its best sense, involves a broad range of research areas such as biodiversity and floristics, conservation biology, phylogenetics, physiology, and others. Today we may perhaps add functional genetics of the mycobionts, which will certainly become more important for a better understanding of functional aspects in lichen symbioses.

This review shall give an impression of the pathways of lichenological research in the few past years. It is of course a personal view and will certainly not include all important papers and there are definitely many noteworthy publications that were published since 2000, and therefore I apologize for missing some of these. It was also not possible to summarize all the many papers in lichen taxonomy, floristics and other aspects of lichenology. Doubtlessly, these are important for the progress of lichenology as they not only provide the required backbone of data and knowledge or a source of inspiration, but are also important in more practical areas such as conservation biology or biomonitoring.

Phylogenetic studies

Phylogenetic concepts are now increasingly stabilized by the analysis of multiple gene loci. In a large study of ascomycetes, which included representatives of more lichenized fungal groups than in previous similar studies, it was found that the loss of lichen symbiosis is more frequent than its gain and it was also suggested that the lichen symbiosis arose much earlier in the ascomycetes than previously assumed (Lutzoni, Pagel & Reeb 2001). Also several major lineages of strictly non-lichenized fungi could have evolved from lichen-forming ancestors. Examples of the latter also includes several economically important fungal groups, such as the Chaetothyriales and the Eurotiales. Starting in 2002, the AFTOL (Assembling the Fungal Tree of Life) project will establish a comprehensive phylogeny of fungi including lichens using different genes which will be sequenced from approximately 1500 different fungi representing all major groups. AFTOL will develop

broad datasets of molecular and subcellular characters, which will be accessible via the world-wide web, in continuously updated databases. Seven molecular regions will be sampled: nuc-ssu rDNA, nuc-lsu rDNA, RPB2, RPB1, EF-1a, ATP6, and ITS. The first results including an improved phylogeny of ascomycetes are now about to be published (Lutzoni et al 2004).

Numerous phylogenetic studies focused on the evolution within main lineages of lichens. Several cases were found for a conflict with the traditional classification. Most strikingly this affected the Caliciales, which were formerly classified at separate ordinal level. Today we know that most Caliciales form monophyletic groups within Lecanorales, and Physciaceae can hardly be separated from Caliciaceae (Wedin et al. 2000b).

A new and interesting aspect of phylogenetic studies the reconstruction of ancestral characters. This approach was used by Lutzoni et al. (2001) to show the early origin of lichen habit in the evolution of ascomycetes. More recently, Miadlikowska & Lutzoni (2004) found in a phylogeny of *Peltigera* that associations exclusively with cyanobacteria were ancestral, while additional acquisition of green algae occurred repeatedly in the evolution of this genus. Rare subsequent losses of the cyanobiont resulted then in species that form symbioses with green algae alone.

Progress was also achieved in the phylogenetic classification of sterile lichens. The genus *Lepraria* was studied by Ekman & Tønsberg (2002), who discovered that the majority of *Lepraria* species is related to Stereocaulaceae.

Species delimitation and population genetics

A multilocus approach was also used in the recent past to investigate the boundaries of species in lichens using a phylogenetic species concept (Kroken & Taylor 2001a) or to study sexuality of lichens (Kroken & Taylor 2001b). Under some circumstances, there might be some limitations. For example, if the sequence variation is low and the sampling of loci and individuals is not sufficient, then ancestral polymorphisms or recombination could obscure species boundaries.

Printzen et al. (2003) used a nested clade approach to assess the phylogeography of the disjunctly distributed foliose lichen *Cavernularia hultenii*. They suggested that the extant geogrphic pattern of this lichen results from a reinvasion in previously glaciated areas from a formerly coherent geographic distribution. As a major discovery of their study might be the suggestion that genetic drift is progressing slowly in this species, i.e. old genotypes are lost very slowly. No genetic evidence for long-distance dispersal was found in that study, which contrasts a previous result for *Letharia vulpina*, for which the Högberg et al. (2002) suggested a North American origin of European populations.

Photobionts

The number of studies on lichen photobionts increased significantly in the past few years. With molecular methods it became feasible to not only elucidate phylogenetic relationships of photobionts at various levels of resolution, but also to study patterns of selectivity in different lichens. Because Beck (2002) reviewed the major achievements

until 2002, only the most recent progresses are mentioned here. The knowledge about the phylogeny of trebouxioid photobionts is now increasingly settled. It still proves difficult to assign species names to the branches of the phylogenetic trees. Rather, previous evidence from two gene loci suggests that the species diversity of trebouxioid photobionts is higher than previously thought (Kroken & Taylor 2000).

In a co-phylogenetic study of *Omphalina* and its symbiont *Coccomyxa*, Zoller & Lutzoni (2003) detected that the symbionts differ significantly by their substitution rates. In contrast to the the mycobiont, the substitution rate of *Coccomyxa* symbionts was found to be extremely low. So far, there are no other published phylogenetic investigations of other photobiont groups, and a big gap of knowledge exists still for Trentepohliacean symbionts.

More data are now available from cyanobacterial photobionts. Rikkinen et al. (2002) demonstrated that lichens on bark share a common pool of cyanobacteria while the "guild" of photobionts is different in soil inhabiting lichens of the same locality. Similar has been found by Lohtander et al. (2003) in the genus *Nephroma*. They also indicated that since the *Nostoc* symbionts of bi- and tripartite species belong to different phylogenetic groups, and evolutionary change in green algal association required a concurrent change in cyanobiont composition. Wirtz et al. (2003) suggested that in the harsh environment of Antarctica selectivity for cyanobacterial symbiont seems to be comparatively low, and lichens did not use species-specific cyanobionts.

Ecophysiology

In comparison to phylogenetic studies, the number of ecophysiological contributions to lichenology was lower in the past years. These include studies on photosynthesis (e.g. MacKenzie et al. 2001) and desiccation tolerance. One of the major problems related to desiccation is the formation of toxic free radicals, which must be scavenged to ascertain the survival of the lichen. Several compounds are responsible for this function, possibly also secondary metabolites of the lichens. Research has focused so far on gluthathione and tocopherol as free radical scavengers. The species of lichens, however, may differ significantly in their relative desiccation tolerance and this agrees clearly with their habitat ecology (Kranner 2002, Kranner et al. 2003).

Some work has focused on UV-B radiation, and investigated the UV-screening properties of secondary metabolites. In a series of papers, Solhaug and co-workers have successfully used acetone-rinsed lichen thalli as a tool to highlight this topic. They showed that lichens start resynthesizing parietin and fungal melanins as a response to hydration and UV-B radiation (Solhaug et al. 2003), and that the resynthesis can also be induced when lichens are soaked with ribitol or sucrose dissolved in water (Solhaug & Gauslaa 2004). They have also shown that the parietin resynthesis in *Xanthoria elegans*, increased with decreasing latitude (Nybakken et al. 2004). Other research groups have looked upon the effects of UV-B radiation in the field and the potential damaging effects of the ozone depletion-related enhancements of shortwave radiation. In particular, the UV-screening roles of usnic acid have been given much focus, and results regarding its UV protection role are equivocal (BeGora & Fahselt 2001, Buffoni Hall et al. 2002, Bjerke et al. 2002, Rancan et al. 2002). The only long-term studies have shown that lichen activity can be seriously reduced by UV-B exposure (Solheim et al. 2002), but that depside synthesis is more affected by warming than by UV-B radiation (Bjerke et al. 2003).

Functional genetics

Functional genetics of lichens is still at its infancy, but improved techniques offer many new challenges of symbiosis research. One first approach will be the discovery of functionally relevant genes and to assess their diversity in lichens. Recent efforts were undertaken to characterize genes that are involved in the biosynthesis of lichen compounds. One essential step in the production of polyketides is the concatenation of acetyl groups by polyketide synthases, which synthesizes the basic structure of compounds. Miao et al. (2001) used conserved primers for one functional domain of these enzymes (the ketoacyl synthase domain) to amplify fragments that can be used to screen genomic libraries of lichens and to assess paralogy in phylogenetic analyses (Grube & Blaha 2003).

Hydrophobins are proteins that self-organize to rodlet layers on the surface of cell walls, and help the lichen symbionts to form an apoplastic continuum. Hydrophobins are characterized from a few lichens so far. It was shown that several types of hydrophobins occur in lichen thalli of *Dictyonema glabratum*, a neotropical basidiomycetous lichen (Trembley et al. 2002a,b). The inter- and intra-specific variability of one orthologous hydrophobin gene (H1) was investigated in *Xanthoria ectanoides* and *X. parietina* (Scherrer et al. 2002). Between these closely related species, the hydrophobins are 96% identical according to deduced amino acid sequences, but there is low similarity with hydrophobins of other organims. In *Xanthoria parietina*, the hydrophobin gene is differentially expressed, with higher levels in the medulla and no expression in the cortex. This agrees with the pattern of hydrophily in the thalli.

The gene for orotidine 5’-monophosphatase was obtained from a phage genomic library of *Solorina crocea* (Sinneman et al. 2000). This gene is responsible for the decarboxylation of orotidylic acid to uridylic acid, the last common step in pyrimidine synthesis. Because the sequence suggested that the regulatory regions exhibit many characteristics of filamentous fungi, heterologous expression achieved in *Aspergillus nidulans*. The transformed *Aspergillus nidulans* colonies showed a temperature sensitivity in the absence of uridine, suggesting an adaptation to lower temperature of the lichen enzyme, which fits well to the ecology of *Solorina crocea*.

One of the most interesting biological questions is the genetic regulation of the symbiosis. Here we are still at a very poor state of knowledge. However, an interesting experiment was done with *Baeomyces rufus*. Trembley et al. (2002) indicated that gene suppression may act in both fungal and algal genomes in early stages of relichenization. However, more experiments are required to assess which genes are actually involved in the formation of a functional thallus.

Conservation biology and biomonitoring

Molecular methods have meanwhile gained an important role in the area of lichen conservation biology. For example, efficiency of the asexual distribution mode was assessed with an interesting approach by Walser et al. (2001). Using species-specific primers they detected considerable amounts of naturally dispersed diaspores, deposited as

far as 50 m away from the closest potential source. Diaspores were only found in the direction of the prevailing wind.

A major step forward in conservation biology of lichens was marked by the Licons meeting in Birmensdorf, Switzerland. The results of this conference were compiled in a proceedings volume (Scheidegger et al. 2000). Similar is the case for biomonitoring, proceedings of a NATO Inernational Advanced Research Workshop were published as a book (Nimis et al. 2002).

Disseminating lichenology

Since the purpose of the IAL is to promote the understanding of lichens and lichenology world-wide, what is the status of lichenological education, and what was done to reach a broader public in lichenology? The activities of local lichens societies to organise excursions and workshops are high and the reader may consult their web pages for more information. As an innovation to promote the efforts of schools to teach about lichenology, the Sharnoff award at IAL5 will honour the best webpage produced in the course of pre-academic education. At an academic level, it is noteworthy that larger projects now increasingly include an educational part. Fro example, the AFTOL project offers the possibility for graduate students (and post-docs) to receive training in molecular phylogenetics. The teaching of lichenology has a special importance in tropical countries which usually lack a lichenological center but host a high diversity of lichens. In this context the cooperation with local facilities may be beneficial for developing local expertise. This was recognised for example by the TICOLICHEN project in Costa Rica (aiming at a complete inventory of lichens of that country). A tropical lichen course for local students was held and local undergraduates are invited to participate at the excursions.

Checklists of lichens

New checklists were published for several European countries, e.g. Belgium and Luxembourg (Diederich & Sérusiaux 2000), Denmark (Søchting & Alstrup 2002; **http://www.bi.ku.dk/lichens/dkchecklist/**), Germany (Scholz 2000; 2399 taxa), the Iberian peninsula including the Balearic islands (Llimona & Hladun 2001), and Slovenia (Suppan et al. 2000; 860 t.). A major progress in Central Europe was achieved also with the production of the checklist of Austria (Hafellner & Türk 2001, 2101 taxa). This publication also contains numerous taxonomic changes and some newly described genera. With the available data from other countries, a joint effort is now undertaken to compile a checklist of lichens for the Alps (Nimis et al. in prep.). Checklists from extra-European countries include a checklist from Argentina (Calvelo & Liberatore 2002; 1670), Japan (Kurokawa 2003; 1557 t.), Tajikistan (Kudratov & Mayrhofer 2003; 524). Only a few tropical countries received more attention. A large project is now aimed towards a comprehensive checklist of Costa Rica (Lücking et al. in prep., at present including 1337 taxa). The progress of this checklist can be followed on the Ticolichen web-site (**http://www.fmnh.org/research_collections/botany/botany_sites/ticolichen/page_checklist.html**). Other checklists for tropical countries are fairly limited and small steps towards a better future knowledge. E.g. the published checklist of Bhutan

contains only 287 taxa, which is certainly only a minor fraction of the actual lichens diversity in theis country (Aptroot & Feijen 2002). Some checklists concentrate on better known ecological groups, for example foliicolous lichens of Brazil (Lücking & Kalb 2000; 371 taxa). The monograph of foliicolous lichens from Japan by Thor et al. (2000) includes 83 taxa. Checklists were also published for lichenicolous fungi (Great Britain & Ireland: Hawksworth 2003; 403 taxa. China: Hawksworth & Cole 2003; 29 taxa. Czeck Republic: Kocourkova 2000; 156). The information of the checklists is continuously extracted to be included in the LIAS framework maintained by Gerhard Rambold (Bayreuth; **http://checklists.lias.net/**) in cooperation with Tassilo Feuerer (Hamburg, **http://www.biologie.uni-hamburg.de/checklists/world_l.htm**).

Conclusion

To summarize this admittedly brief overview one may possibly see some changes of interest in lichenology. Certainly, molecular studies play an ever increasing role in the further development of lichenology, not only for phylogenetic progress but also in a better understanding of lichen biology and ecology. On the other hand some traditional fields seem to decline. This is certainly the case in phytosociology of lichens. Unfortunately, also the number of research groups working on lichen chemistry and the contributions on lichen chemistry are declining rapidly, and this is a trend the lichenological community should strive to stop.

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The Editor

Dead elks and toxic lichens

The case of 300 elks who died after consumption of lichens has drawn considerable public interest in Wyoming, USA. Newsletter reports suspected "*Parmelia molliuscula*" as a possible cause after it has been found in the stomachs of the animals and after feeding experiments. The dissemination on lichens-l of this possible evidence for lichen intoxication resulted in a spontaneous discussion. Here, some of the interesting contributions are presented.

It all sounds a bit suspect to me. *Parmelia molliuscula* is only listed in the most recent North American checklist as a misidentification. I wonder what it really was - and who did the identification. They probably force fed the poor animals sack fulls of the stuff.

Alan Fryday, XXX

I read the article today in the Boulder Camera. When I came to Boulder in 1946, soon after, I believe in the winter of 1947-48 there was a terrible snowy winter on the Red desert of Wyoming and thousands of animals, especially antelope, got snowbound and died getting caught in snow fences. I don't know whether the lichens had anything to do with this because it is so long ago I don't know how I could find a report on it. But also, I heard, probably at a Colorado-Wyoming Academy of Science meeting in that year, that in southern Wyoming, a lot of sheep were killed by what they called Parmelia molliuscula that drifted into very large windrows. This information seemed at the time to be common knlwledge. In an extreme drought year like this one, there has been little snow and lots of wind, so I supposed that the lichens were the only visible source of food for those elk (what were they doing there but to come down out of the mountains for forage?). However, since nobody had the sense to contact a lichenologist, they got the old nomenclature. Now things are more complicated. Evidently we are supposed to have *Xanthoparmelia chlorochroa* (described from North America) and *P. vagans* (described from Asia). I would consider these chemical strains, but who knows?
I hope that some jerk in the Forest Service doesn't get the notion that we need to protect the elk by vacuuming up all of the unattached lichens!
I'd like to know more about this. Evidently caribou, reindeer, and elk are ungulates and presumably should be able to tolerate usnic acid. We know that usnic acid has been

developed as a medicinal in Finland. Is it usnic acid that is the cause of these deaths or some other chemistry in the *Xanthoparmelia*? Having gotten out of serious lichenology, I am not the one to go writing letters to the editor in a field where I am not able to be sure of my information.

Bill Weber, Boulder

Bill Iselin, working at the ASU Lichen herbarium, posted an email on the lichen list server a while ago about the liver toxicity of a commercially available product containing usnic acid (Note by the Editor: Lipokinetix, Syntrax Innovations) . He also drew my attention to a recent publication in the IAL Newsletter on hallucinative effects of various lichen substances. In that little paper a human death from usnic acid is mentioned as a result of taking daily doses of 500 mg capsules over 17 days. This adds up to a rather large amount of 8.5 g of usnic acid! I am no lichen chemist, but I wonder how much usnic acid is present in one standard sized Xanthoparmelia thallus...
Everyone knows that reindeer lichens feed on huge amounts of lichens. Many of these arctic tundra lichens certainly contain usnic acid and do not have any obvious adverse effect. Reindeer even rely on this important food source for survival. Why elk should be adversely affected is a mystery to me!
I hope Roger Rosentreter and Bob Egan get a foot in the door, at least helping those "elk guys" getting their identifications straightened out!
I believe it is very important that the media get another turn on the whole story. It could be disastrous if the public generally associates lichens with toxins. Nevertheless there might be a point to the liver toxicity of usnic acid...

Frank Bungartz, Tempe

Another possible political danger of this report: *X. chlorochroa* often occurs along with biological soil crusts, and could be considered a part of those communities. Soil crusts are an issue in the west due to their vulnerability to grazing. This report could damage efforts to conserve them and I can easily imagine that next time I mention them at a land management meeting, someone will say, "I heard those are toxic to wildlife!"

Eric Peterson, XXX

I have been reminded about the episode a few weeks back about lichens killing elk in Wyoming. I was supposed to get samples from the Wyoming wildlife people but after many phone calls by myself and National Wildlife Health Center officials, we gave up because Wyoming refused to send samples. I emphasized how important this was to clarify the role of lichens in the mortality event, but no luck. The National Wildlife Health Centre people were very helpful and anxious to have it sorted out, but they could not get the Wyoming officials to respond. It seems the Wyoming officials felt embarrassed by what happenend, and said the media blew it all out of proportion. After all, they had dead elk on their hands and wanted to be cleaned of the mess. The National Wildlife Health Center director told me this kind of thing has happened before and to let it go. She also told me she had heard through the grapevine it was probably usnic acid overdoses from overeating. The elk that died were not native, and must not have known the lichen (almost certainly *Xanthoparmelia chlorochroa* or *wyomingica*) was not a desirable food. Rumors of it being selenium or other compounds are probably unfounded. I tried to find out who did the lichen identification but was unsuccessful.
There is a slim chance the event will be described and published somewhere, but definitely not in a lichen journal. More likely it will appear in a veterinary or wildlife journal, which

we almost never see. The people at the center are on the alert, however, and will let me know if they hear anything. There may still be a chance samples could still be sent someday.
I am sorry this didn't work out the way we all hoped.

Jim Bennett, XXX

LICHENOLOGY ON-LINE

The Michigan State University Lichen Database Project

In May 2003 we began a 3 year project, financed by the US National Science Foundation (Award No. DBI-0237401), to computerize the label data from our entire lichen collection and make it available and searchable on-line. Because of the geographic scope of the collection, which includes many remote, sub-antarctic islands, the Caribbean, western North America, and Michigan, the database will be extremely useful to researchers working on all aspects of the natural environment of these areas. The availability of the data on the Internet will also serve as a form of data repatriation to the many countries, especially developing ones, from which the collections were made.

We are using SPECIFY **http://www.specifysoftware.org/**to enter the data and, after overcoming the initial problems involved with learning a new system and customizing the data entry form to suit our purposes, data is now being entered at around 1500 records/week. All data associated with the specimens (collector, collection date, locality, and habitat) are being entered into the database, along with any additional information added as annotations, (e.g. chemistry, spore dimensions, apothecial pigments). All name changes and additional species present on the specimen are also being recorded.

We have entered the data from all of our accessioned collections from Australasia, South America, the Caribbean, and Michigan and are currently working on the North American collections. We anticipate making this database available and searchable on line in the near future, but until then we welcome requests for information. We can query the database by any field using any of the usual operators. We have already responded to requests for information on chemical content of a lichen species across its geographical range, and lichens collected from specific areas.

Details of the lichen collection, including its geographic scope are available on the MSU Herbarium web-site at **http://www.bpp.msu.edu/herbarium**. If you require any data from our database, or have any other questions concerning this project, please contact me at *fryday@msu.edu*.

Alan Fryday

Lichenology Education Mart

Scientific research, including lichenology, has been cosmopolitan at all times, but recent trends go towards a higher degree of internationalization of all levels of academic

education. At least in Europe students are urged to study abroad as part of their personal curriculum, and several European Community programs provide financial support to encourage student mobility. This internationalization is important for courses offering training in subjects that may be too specialized to attract sufficient students from one university or even from one country. Lichen courses may profit from this. At University of Copenhagen a course in identification and ecology of lichens has in recent years attracted dedicated students from Spain, Belgium and Greece.

Some lichen courses are announced through the IAL Newsletter, but most of them are only advertised within a region, a country, or a university, or through the homepage of the local or national lichen society. This may in some cases reflect to what extent the organizers want to attract foreign students, but it may also be due to lack of a proper international place to advertise.

To facilitate the advertisement of both undergraduate, graduate and PhD courses internationally we decided to put up an Internet site for courses on any aspect of lichenology. The site is located on a server at University of Copenhagen, to where the course organizers will themselves be responsible for on-line upload of the appropriate information on their courses. This information must include time, venue, teaching language, restrictions of participants, fee or tuition, content etc. Links to further information at local server can also be included. It is hoped that IAL will use this "Lichenology Education Mart" as an official meeting place for students and teachers in order to improve lichenological training worldwide.

The site will be fully operational at **www.bi.ku.dk/lichens/courses** in August at the time of IAL5 in Tartu. However, it must be anticipated that some adjustments will take place according to the experience gained. The success of the site will depend only on the users, but we hope you will support the initiative by uploading information on your future lichen courses.

Ulrik Søchting, Copenhagen

Back issues of ILN

The following back issues of ILN are still available: 9(1), 9(2), 10(1), 10(2), 11(1), 11(2), 12(1), 12(2), 13(1), 13(2), 14(1), 14(2), 15(1), 15(2), 16(1), 16(2), 17(1), 20(1) and further issues. Photocopies are available of: vol. 1(1), 1(2+supp.), 1(3), 2(1), 3(2), 6(2), 7(1–2), 8(1–2). Two indexes are also available: Index to vol. 1–8, Index to vol. 9–13.
According to a resolution of the IAL Executive Council, published in ILN 16(1), April 1983, the following charges will be levied for back issues of ILN: Vol. 1: 0.25 USD per number (3 per volume); vol. 2–8: 0.50 USD per number (2 per volume); vol. 9–13: 1.00 USD per number (2 per volume); vol. 14–17: 1.50 USD per number (2 per volume). Back issues from vol. 20–29 are available for 1.00 USD per number (3 per volume). The Indexes are free. New members will only receive free copies of the numbers constituting the volume issued for the calendar year in which they join IAL.
Orders for vols. 1–29 should be sent to H. Sipman, Botanischer Garten & Botanisches Museum, Königin-Luise-Straße 6–8, D-14191 Berlin, Germany, fax: (+49)-30-84172949, e-mail: *hsipman@zedat.fu-berlin.de*. For later issues contact the Editor.

Lichens-l is the official mailing list of IAL. You can subscribe by sending an e-mail to *listproc@hawaii.edu* with the message “SUBSCRIBE LICHENS-L YourFirstName YourLastName”.

The official web page of IAL is
http://www-ang.kfunigraz.ac.at/~grubem/ialweb/ial.html

The cover-page illustration

The illustration shows a schematic drawing of a transversal ascoma section from *Ocellularia cavata*, a member of the order Ostropales. Note the apically carbonized excipulum and the carbonized columella. The drawing was kindly provided by Andreas Frisch (Regensburg) and is part of his doctoral thesis on Thelotremataceae.

List of Societies

Australasia: Australasian Association for Lichenology. Info: W.M. Malcolm, Box 320, Nelson, New Zealand. Phone & fax: (+64) 3-545-1660, e-mail: *nancym@clear.net.nz*

Brazil: Grupo Brasileiro de Liquenólogos (GBL). Info: Marcelo P. Marcelli, Instituto de Botânica, Seção de Micologia e Liquenologia, Caixa Postal 4005, São Paulo – SP, Brazil 01061-970. Fax: (+55)-11-6191-2238, phone: (+55)-11-5584-6304 (inst.), 218-5209 (home), e-mail: *mmarcelli@sti.com.br*

Central Europe: Bryologisch-lichenologische Arbeitsgemeinschaft für Mitteleuropa (BLAM). Contact: Norbert J. Stapper, e-mail: *nstapper@t-online.de*, web page: **home.t-online.de/home/blam-ev/home.htm**

Czech Republic: Bryological and Lichenological Section of the Czech Botanical Society. Info: Jiří Liška, Institute of Botany, Academy of Sciences of the Czech Republic, CS-252 43 Pruhonice, Czech Republic, e-mail: *liska@ibot.cas.cz*

Finland: Lichen Section, Societas Mycologica Fennica. C/o: Botanical Museum (Lichenology), P.O. Box 47, FIN-00014 Univ. Helsinki, Finland. Info: Teuvo Ahti, phone: (+358)-9-7084782, fax: (+358)-9-7084830, e-mail: *teuvo.ahti@helsinki.fi*

France: Association Française de Lichénologie (AFL). Info: Damien Cuny, Laboratoire de Botanique, Faculté de Pharmacie, 3, rue du Professeur Laguesse, BP 83, 59006 Lille Cedex. Phone (+3)-209-64040 poste 4289, fax (+3)-209-59009, e-mail: *damien.cuny@wanadoo.fr*

Great Britain: The British Lichen Society (BLS). C/o: Department of Botany, The Natural History Museum, Cromwell Road, London SW7 5BD, UK. Info: Pat Wolseley, phone: (+44)-20-7942-5617, fax: (+44)-20-7942-5529, e-mail: *bls@nhm.ac.uk*, web page: **www.theBLS.org.uk**

Italy: Società Lichenologica Italiana (SLI). C/o: Museo Regionale di Scienze Naturali di Torino, v. Giolitti, 36, I - 10125 Torino. Info: Giovanni Caniglia, Dipartimento di Biologia, V.le G. Colombo, 3, I-35121 Padova. Phone: (+39)-049-8276-239, fax: (+39)-8276-230, e-mail: *caniglia@civ.bio.unipd.it*, web page: **www.lrcser.it/~sli**

Japan: The Japanese Society for Lichenology (JSL). Info: Yoshikazu Yamamoto, Secretary of JSL, Akita Prefectural University, Shimoshinjyo-nakano, Akita, 010-0195 Japan, fax (+81)-18-872-1678, e-mail: *yyamamoto@akita-pu.ac.jp*

Lichenological Society of Japan (LSJ). Nobuo Hamada, Secretary of LSJ, Osaka City Institute of Environmental Sciences, Tojo 8-34, Tennoji, Osaka 543-0026, Japan, e-mail: *MXI00715@nifty.com*

The Netherlands: Dutch Bryological & Lichenological Society (Bryologische + Lichenologische Werkgroep, BLWG). Info: Dick Kerkhof, e-mail: *info@blwg.nl*, web page: **www.blwg.nl**

Nordic Countries: Nordic Lichen Society (Nordisk Lichenologisk Förening, NLF). Info: Ulrik Søchting, Dept. of Mycology, Botanical Institute, Ø. Farimagsgade 2D, DK-1353 Copenhagen; phone: (+45)-3532-2313, fax: (+45)-3532-2321, e-mail: *ulriks@bot.ku.dk*, web page: **www-hotel.uu.se/evolmuseum/fytotek/NLF/**

North America: American Bryological and Lichenological Society, Inc. (ABLS). Info: James D. Lawrey, Department of Biology MSN 3E1, George Mason University, 4400 University Drive, Fairfax, Virginia 22030-4422, USA. Phone: (+1)-703-993-1059, fax: (+01)-703-993-1046, e-mail: *jlawrey@gmu.edu*, web page: **ucjeps.berkeley.edu/bryolab/ABLS.html**

North America, Northwest: Northwest Lichenologists (NWL). Info: Bruce McCune, 1840 NE Seavy Avenue, Corvallis, Oregon 97330 USA. E-mail:

mccuneb@bcc.orst.edu, web page: **www.nwlichens.org** (To get on the e-mail list, contact Sherry Pittam: *pittams@bcc.orst.edu*)

North America, California: The California Lichen Society (CALS). P.O. Box 472, Fairfax, CA 94930, U.S.A. Info: Janet Doell, e-mail: *aropoika@earthlink.net*, web page: **ucjeps.herb.berkeley.edu/rlmoe/cals.html**

North America, East: Eastern Lichen Network. Info: Marian Glenn, fax: (+1) 973-761-9772, e-mail: *glennmar@shu.edu*

South America: Grupo Latino Americano de Liquenólogos (GLAL). Info: Susana Calvelo, Centro Regional Universitario Bariloche, Universidad Nacional del Comahue, Bariloche- 8400, Río Negro, Argentina; phone: (+54) 944-23374 or 28505, fax: 62215 or 22111, e-mail: *scalvelo@crub.uncoma.edu.ar*

Poland: Lichenological Section of the Polish Botanical Society. (Polskie Towarzystwo Botaniczne). C/o: Krystyna Czyzewska, Department of Algology and Mycology, University of Lodz, Banacha 12/16, 90-237 Lodz, Poland, e-mail: czyzew@biol.uni.lodz.pl; Info: Urszula Bielczyk, Institute of Botany, Polish Academy of Sciences, Lubicz 46, 31-512 Krakow, Poland, phone: (+48) 12-4241768, fax: (+48) 12-4219790, e-mail: bielczyk@ib-pan.krakow.pl

Slovakia: Slovak Botanical Society – Lichenological Working Group, c/o Institute of Botany, Slovak Academy of Sciences, Dubravska cesta, 14 842 23 Bratislava, Slovakia. Info: Anna Guttova, phone: 07-59412501, fax: 07-54771948, e-mail: *botugutt@savba.savba.sk*, web page: **www.botanika.sk**

Spain: Sociedad Española de Liquenologia (SEL). Info: Ana Rosa Burgaz, Dpto, Biologia Vegetal I, Fac. CC. Biologicas, Universidad Complutense, E-28040-Madrid. Phone (+34) 1 394 5042, fax: (+34) 1 3945034, e-mail: *arburgaz@bio.ucm.es*

Sweden: Svensk Lichenologisk Förening (SLF). Info: Per Johansson, Inst. f. Naturvårdsbiologi, SLU, Box 7002, 750 07 Uppsala, Sweden. Email: *Per.Johansson@nvb.slu.se*

Switzerland: Association Suisse de Bryologie et Lichénologie (BRYOLICH). Info: Silvia Stofer, WSL, Zuercherstrasse 111, CH-8093 Birmensdorf. E-mail: *stofer@wsl.ch*

Turkey: Club of Turkish Lichenologists (TLT). C/o: Ay∏en Türk, Anadolu University, Dept. of Biology, TR-26470 Eski∏ehir, Turkey. E-mail: *aturk@anadolu.edu.tr* Info: Attil> Yıldız, Ankara University, Dept. of Biology, TR-06100 Be∏evler-Tando an/Ankara. Phone: (+90)-3122126720, fax: (+90)-3122232395, e-mail: *ayildiz@science.ankara.edu.tr*

Advisory Board of IAL

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