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The Society is extremely grateful for the support of its Sustaining Members. These organizations are listed above in alphabetical order. Patronize them and let their representatives know of our appreciation whenever possible.

OFFICERS OF THE MYCOLOGICAL SOCIETY OF AMERICA

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EDITOR'S NOTE

One of the departures from MSA "routine", necessitated by this year's joint meeting of the MSA with the American Phytopathological Society and the Society of Nematologists, was the printing and the distribution to all those attending of the abstracts of papers presented. Because of their potential value to the entire membership, the abstracts (from the MSA program) are included in this issue along with the usual news. Their lateral layout herein represents a one-time departure from the normal format and was necessitated by the special abstract size required for printing in the Official Meeting Publication.

All of the illustrations included on these pages are of heretofore unpublished, original art. The cover figure—Didymium nigripes—is the work of Henry Stempn (Biology Department, Rutgers University). Henry also supplied the drawings of the "Foliose Lichen Thallus On Pine Branch" (page 6) and Crucibulum laeve (page 49). The Astraeus hygrometricus, pictured on page 8, was done by Richard M. Hannan (Regional Plant Introduction Station, USDA, Washington State University). Frank DiCosmo (Department of Botany, University of British Columbia) submitted the illustrations of Phacidium coniferarum on page 53.

As evident on page 47, this issue marks the first to include advertising (see General Announcements for information).

Finally, this Newsletter issue represents the first produced from the SIU mycological laboratory—with the help (and patience!) of Shelly Briles and Jan Sundberg. Any errors or omissions, of course, are mine. My "initiation" into the editorship was made much easier by the efficient and detailed organization of the previous editors and, most of all, by their willingness to share their organizational strategy, information, and insights. The job done by Don Pfister, Geraldine Kaye, and their associates at the Farlow Herbarium over the past several years will indeed be a hard act to follow! Herewith is my attempt.
GENERAL ANNOUNCEMENTS

FROM EDITH CASH (VIA L. R. BATRA)

"Miss Edith Cash, now 92 years, sends her greetings to MSA members, and feels privileged to have worked with several of us. She announces that she can no longer undertake translation of fungus diagnoses into Latin."

STUNTZ MEMORIAL SCHOLARSHIP

A Daniel Elliot Stuntz Memorial Scholarship Fund is being established to continue developing the area of mycology to which Professor Stuntz contributed most of his life. It will support graduate students studying the systematics of fungi. For further information, contact Joseph Ammirati.

AMERICAN MEN AND WOMEN OF SCIENCE

The database for American Men and Women of Science is currently being enlarged by the addition of new entrants who have the education and training equivalent to the doctorate and who have attained a position of responsibility in the sciences. Prospective entrants may request information or a questionnaire on which to submit information from The Editors, Jaques Cattell Press, P.O. Box 25001, Tempe, AZ 85282.

A NEW JOURNAL

The new journal, Acta Mycologica Sinica, now in Vol. 2 and with abstracts in English, is now available from Science Press, 137 Chao-yang-men-nei Avenue, Beijing, China.

FORAY REPORTS WANTED


GET YOUR ART IN PRINT

W. J. Sundberg hereby requests submission of unpublished original mycological art work, especially for the Newsletter cover and unpublished Mycological cartoons and humor to be used in the MSA Newsletter when feasible and as space permits. For art work, inked, "copy-ready" black and white illustrations are required. All original materials can be returned to the artist or author.

NEWSLETTER ADVERTISING

With the approval of the MSA Council (August 8, 1982) and starting with Volume 34, June 1983, the MSA Newsletter will accept advertising (at the discretion of the editor) from commercial firms and individuals in private business. Advertisements may be full-page, half, or quarter-page size and must be prepared in photo-ready copy. Help support and defray the cost of the Newsletter by encouraging its use as an advertising vehicle for appropriate mycological, botanical, or other biological materials. Contact W. J. Sundberg for details.

DON PFISTER HAS COPIES OF D. P. ROGERS' "A BRIEF HISTORY OF MYCOLOGY IN NORTH AMERICA"
CALENDAR OF MEETINGS AND FORAYS

July 1983

16-17  The OHIO MYCOLOGICAL SOCIETY (OMS) SUMMER FORAY, will be held at Penitentiary Glenn (NE Ohio). For details write to OMS/Walt Sturgeon, 288 E. North Ave., East Palestine, OH 44413.

22-24  The THIRD WILD MUSHROOM FAIR at Museo Regional de Guadalajara Liceo e Hildalgo in Guadalajara City, Mexico. Contact F. Trujillo-Flores, Facultad de Ciencias, University of Guadalajara, Guadalajara, Jalisco, Mexico.

August 1983

7-12  The THIRD INTERNATIONAL SYMPOSIUM ON MYCOBIAL ECOLOGY will be held at Michigan State University. Program information and registration forms can be obtained from the Kellogg Center for Continuing Education, Michigan State University, East Lansing, MI 48824, USA or by telephoning (517) 355-4540.

11-14  The University of Maine in Orono, Maine will be the site of the NORTHEAST MYCOLOGICAL FORAY. Get more data from Robert H. Peabody, RD #4, Box 281, Easton, PA 18042.

25-28  The TELLURIDE MUSHROOM CONFERENCE, Telluride, Colorado, is for persons interested in mushroom identification and cultivation. For more information contact Emanuel Salzman, M.D., Box 5503, Denver, CO 80215-5503.

28-S3  The THIRD INTERNATIONAL MYCOLOGICAL CONGRESS will be held in Tokyo, Japan. For information write Secretariat: Prof. K. Tubaki; c/o International Congress Service, Inc.; Chikusen-Bldg. 2-7-4, Nihombashi, Chuo-ku; Tokyo, Japan.

September 1983

5-6   The FIRST INTERNATIONAL SYMPOSIUM ON CHEMOBIODYNAMICS, entitled "Filamentous Microorganisms--Current Topics of Infection, Toxicosis and Control" is to be held at Chiba City, Japan. For details write (by Air Mail) Prof. Tetsuro Kuga; Gen. Secretary; 1st Symposium on Chemobiodynamics; Research Institute for Chemobiodynamics; Chiba University; 1-8-1, Inohana, Chiba; 280 Japan.

8-11  The ALEXANDER H. SMITH LAKE STATES FORAY for 1983 will be held at Southern Illinois University's outdoor laboratory and vicinity. Attendance is limited and the cost is approximately $50.00. Contact W. J. Sundberg for further information.

9-11  A FLESHY FUNGI WORKSHOP is being offered by Walt Sturgeon at Terra Alta Mountain Camp in West Virginia. Fee: $40.00. Write to the Oglebay Institute, Brooks Nature Center, Oglebay Park, Wheeling, WV 26003 or call the Nature Center at (304) 242-6855.

16-18  The 30th annual C. H. PECK MYCOLOGICAL FORAY will be held at the Edmund Niles Huyck Preserve in Rensselaer, New York. According to John Haines, "Rensselaer is the most beautiful village in New York." Cost (sans meals) is $25.00 or free if you are a member of the Huyck Preserve Foundation ($10.00 membership fee by Sept. 1). For information, membership blanks, etc., write John H. Haines, Rm. 3132 CEC, New York State Museum, Albany, NY 12230.

October 1983

2-23  A MUSHROOM STUDY TOUR, held in the People's Republic of China, is for persons interested in Oriental mushrooms and the use of fungi in traditional Chinese
medicines. Contact Emanuel Salzman, M.D., Box 5503, Denver, CO 80215-5503.

8-9 The OHIO MYCOLOGICAL SOCIETY FALL FORAY will be held in Hocking County, OH (SE OH). Write to Walt Sturgeon (see July 16-17 above) for details.

May 1985

19-24 The meeting of the IX CONGRESS OF THE INTERNATIONAL SOCIETY FOR HUMAN AND ANIMAL MYCOLOGY will be held in Atlanta, Georgia. Direct inquiries to Dr. Libero Ajello, Division of Mycotic Diseases, Center for Disease Control, Atlanta, GA 30333.

FORTHCOMING COURSES

Through Western Washington University's summer session (July 29-August 19, 1983), SEMINAR IN BIOLOGY--SURVEY OF ALPINE FUNGI AND LICHENS (Biology 417c, 3 credits) will be offered. Contact Fred Rhoades, Biology Dept., Western Washington University, Bellingham, WA 98225.

A class in FIELD MYCOLOGY will be given in the Adirondacks via Cortland College, New York. Obtain further details from Timothy Baroni, Dept. of Biological Sciences, P.O. Box 2000, Cortland College-SUNY, Cortland, NY 13045.

BASIC MUSHROOM IDENTIFICATION I--MACRO and MUSHROOM IDENTIFICATION II--MICRO will be two courses given at Cispus Environmental Center near Mt. St. Helens on June 24-26, 1983. For more information contact Dr. David R. Hosford, Dept. of Biological Sciences, Central Washington University, Ellensburg, WA 98926.

A class entitled ECOLOGY OF THE FUNGI will be given at INIREB at Xalapa, Veracruz, Mexico from September-December, 1983 in the Master Degree curriculum. Contact Dr. Gaston Guzmán, INIREB, Apartado Postal 63, Xalapa, Veracruz, Mexico 91000.

FLESHY FUNGI OF THE SIERRA will be offered at the San Francisco State University Sierra, Nevada Field Camp June 13-17, 1983. Contact Harry D. Thiers, Dept. of Biological Sciences, San Francisco State University, San Francisco, CA 94132.

In the Fall, 1983, INTRODUCTORY MYCOLOGY will be given at Auburn University. Contact Gareth Morgan-Jones, Dept. of Botany & Microbiology, Auburn University, Auburn, AL 36830.

Instruction on the LABORATORY AND CLINICAL DIAGNOSES OF HUMAN AND ANIMAL MYCOSES will be presented on July 6-29, 1983. For information, write Dr. Norman L. Goodman, Dept. of Pathology, University of Kentucky, College of Medicine, Lexington, KY 40536.

Fred Spiegel will teach a course in HIGHER FUNGI as Special Topics in Botany at the University of Arkansas during the spring semester, 1984. You may contact Dr. Spiegel at the Dept. of Botany and Microbiology, University of Arkansas, Fayetteville, AR 72701.

A continuing education course on METHODS FOR IDENTIFICATION OF PROFICIENCY-TESTING MOULDS will be held at the University of California Medical School in San Francisco on August 22-23, 1983 at a cost of $150.00. Write Dr. Carlyn Halde, Department of Microbiology, UCSF, San Francisco, CA 94143 for further details.

Systematics and ecology of resupinate fungi in southern Illinois will be the topic of SEMINARS IN BOTANY-MYCOLOGY (includes lab) in fall semester, 1983. For information, write W. J. Sundberg, Dept. of Botany, Southern Illinois University, Carbondale, IL 62901.

Dexter H. Howard reports the offering of DIAGNOSTIC MEDICAL MYCOLOGY (X497.2) at UCLA July 23-24, 1983. Additional information is available from the Division of Allied Health, University Extension, UCLA, Los Angeles, CA 90024.
E. B. and M. F. ALLEN: The role of mycorrhizae in competition between weeds and rangeland grasses.


F. DICOSMO: Regulation of general secondary metabolism in cultured plant cells by fungal glycoproteins.

B. DMITRIEFF: Study of nutrient media for Boletus cultivation.

A. FOUDIN: Developing new rapid identification techniques for fungal pathogens of corn and other crops. Initial focus on Dreherslera maydis and D. carbonum field identification technology.

G. GUZMAN (with D. MARTINEZ): Subindustrial cultivation of Pleurotus ostreatus on coffee bagasse.

R. T. HANLIN (with O. TORTOLERO; B. JIMENEZ, and E. S. LUTTRELL also participating): Taxonomic studies on plant pathogenic Ascomycetes in Venezuela. Sponsored jointly by US, NSF, and CONICIT of Venezuela; primary objective is identification of crop pathogens of uncertain identity and currently prevalent in this country.

G. KAYE: Received a Bryant Fellowship for a new project titled "Biographical notes on cryptogamic botanists: a computerized file".

R. P. KORF: Preparation of an annotated bibliography on taxonomy of non-lichenized discomycetes (5-year minimum projected completion).


S. NEWELL: The dynamics of biomass and productivity in the attached microflora of smooth cordgrass, Spartina alterniflora. Project involves radioimmunosorbent assay of fungal biomass dynamics; any advice or comments (including warnings) are welcome.

D. PORTER: Macrofungi of barrier island sand dunes (centered at Sapelo Island, GA).

J. W. RIPPON: The relative virulence and thermotolerance of isolates of Trichosporon beigelli and Aspergillus flavus from a cluster of fatal human infections.

F. RHOADES: Niche space occupation by Mycena spp. In search of the alternate morphotype of Dendriscocaulon unhausense.

L. J. SPIELOMAN: Taxonomy and pathogenicity of Septoria spp. on poplars in Ontario.


E. TAYLOR: Cellulose decomposition by detritivore gut symbionts and free-living microbes (bacteria, fungi, and actinomycetes) in desert dune ecosystems.
H. D. THIERS: Agaricales of California to include taxonomic coverage of all fleshy fungi including lamellate and fleshy pore fungi. To be issued in parts. Amanitaceae already in print; others to appear in the near future.

J. M. YEN: Research on parasitic fungi (new and old) from tropical countries.

Fungi for Distribution

Myxomycetes

C. T. Rogerson has duplicate specimens of Myxomycetes from the Hagelstein collection, and they are available on exchange.

Basidiomycetes

B. Dmitrieff has cultures and specimens of Boletus.

R. F. Harris has available Shiitake spawn plugs for sale ($15.00/300 to $25.00/1000) from the summer and winter of 1982.

D. Hosford has Rhizopogon spp.—specimens.

Rod Tulloss has dried specimens of Amanita Section Lepidella from the New Jersey Pine Barrens. (See Publications Available for Rod's address).

Special Note

For those mycologists who also teach The Plant Kingdom, C. J. Wang has a limited number of subterranean gametophytes of Psilotum nudum available for distribution.

Send your art work to Walter J. Sundberg for possible inclusion in the MSA newsletter.
Fungi Wanted

Myxomycetes

K. L. Braun, Jr.: Myxomycetes from Mexico. Bark from identified trees from Mexico.

J. Clark: Cultures or fresh specimens of Didymium species.

S. L. Stephenson: Myxomycetes, especially collections from western North America.

oomycetes

A. A. Held: Has lost his culture of Olpidiopsis varians on Achlya flagellata and requests that anyone who received a subculture from him and was able to keep it alive please return the favor.

S. A. Warner: Lagenidium species other than L. giganteum or L. callinectes.

Ascomycetes

J. H. Haines: Specimens of Hyaloscyphaceae from anywhere in exchange for identification.

T. Iturriaga: Strossmayeria cultures and specimens.

J. D. Jensen: Fertile cultures of Melanospora species.

R. P. Korf: Any Discomycetes from Macaronesia (Azores, Canary Islands, Madeira, Cape Verde Islands) or from Bermuda--cultures or specimens.

Basidiomycetes


T. J. Baroni: Cultures and specimens of Clitopilus and Rhodocybe, notes and kodachromes helpful.

D. Largent: Entoloma (sensu lato) from along the Pacific Coast. Notes must accompany specimens. In addition, photographs are preferred, but not required.

G. F. Leatham: Strains of Lentinus edodes which fruit well above 18°C.

D. R. Hosford: Rhizopogon or other hypogeous or epigeous Gasteromycetes; with descriptive notes.

D. Pruss: Specimens of Tulostoma and Chlamydopus from North America, especially the western United States.

R. D. Reeleder: Boletus species--cultures and loan of herbarium material.

E. Rowe: Dried specimens of Cortinariurn croceofolius and C. phoeniceus.

W. J. Sundberg: Specimens (with notes and/or photographs) of Leiopta sensu lato.

R. Tulloss: Specimens of the genus Amanita, preferable with colored slides of the collection and notes, especially sections Ampelilla and Lepidella. (Please contact first).
D. A. Wright: Resupinate Hydnaceae with date of collection and location.

DEUTEROMYCETES

A. Foudin: Cultures of (or leaf tissue with) Drechslera maydis or Drechslera carbonum (Helminthosporium maydis, Helminthosporium carbonum). Mailing permits available on request.

T. Iturriaga: Pseudospiropes cultures and specimens.

M. D. Riley: Needs a culture of Cephalosporium or Acremonium that has been identified to species, ("preferably not longisporum or salmosynnematum") for use in carbohydrate utilization studies. Contact Mike at Chaffey College, Life Science Division, 5885 Haven Ave., Alta Loma, CA 91701. Phone: (213) 332-2393.

J. W. Rippon: Isolates of Trichosporon beigeli from saprophytic environments (soil, water, flux, etc.)

L. J. Spielman: Specimens and/or cultures of Septoria species from Populus.

G. J. Weidemann: Cultures of Colletotrichum species.

MISCELLANEOUS

D. E. Bianchi: Cultures taken from living spiders or spiders with fungal infections.

C. W. Hesseltine: Starter material for food and alcohol fermentations in the Orient, such as ragi and Chinese yeast.
IDENTIFICATIONS

The following are willing to identify the taxa specified.

MYXOMYCETES

H. W. Keller: Species in the genus Licea, Perichaena, and Diachea. Limit to four or fewer specimens.

ZYGOMYCETES

T. Iturriaga: Strossmayeria (Helotiales).
J. H. Haines: Hyaloscyphaceae.
R. P. Korf: Arachnopezizoideae (Helotiales).
A. Rossman: Members of the Hypocreales and fleshy, bright-colored Loculoascomycetes, Tubeufiaceae.
L. J. Spielman: Valsa (and Cytospora).

BASIDIOMYCETES

J. Ammirati: Cortinarius.
T. J. Baroni: Clitopilus and Rhodocybe.
Dr. Hosford: Hypogeous Gasteromycetes; Lycoperdon (from North America).
D. L. Largent: Entoloma (sensu lato).
W. J. Sundberg: Lepiota sensu lato.
R. Tulloss: Amanita.

DEUTEROMYCETES

G. Morgan-Jones: Deuteromycotina
T. Iturriaga: Pseudospiropes

SUGGEST MSA MEMBERSHIP TO A FRIEND OR STUDENT.
NEW BOOKS BY MSA MEMBERS

The following announcements were received in response to the MSA Newsletter questionnaire:


PUBLICATIONS AVAILABLE--FOR GIVE-AWAY, SALE, OR EXCHANGE


R. E. Koske has copies available of the revised edition of COOKBOOK STATISTICS FOR PLANT PATHOLOGISTS & MYCOLOGISTS. He has had it printed locally and copies can be obtained by sending $7.50 to him.

Rod Tulloss will send you for the price of postage and photocopying, AMANITA IN THE US AND CANADA: A BIBLIOGRAPHY AND ANNOTATED INDEX (by taxon, 60 pp.). 21 Lake Drive, Roosevelt, NJ 08555.

John A. Parmelee has available at no charge an annotated listing of the parasitic fungi in Ontario north of latitude 48°. A total of 263 taxa are recorded, more than half of which are rusts and smuts. Significant extensions of distribution within Ontario are noted, along with new records of occurrence for the province, for Canada, and for North America. Copies of this list can be obtained by writing Dr. Parmelee.

Available from Jo Min Yen for the price of postage are many publications in English or in French on rusts or on Cercospora.

Richard L. Blanton has the following publications for sale: TRANSACTIONS OF THE BRITISH MYCOLOGICAL SOCIETY, volumes 62-73 (1-74-79), $5 per year plus postage; AMERICAN JOURNAL OF BOTANY, volumes 60-69 (1973-82), $4 per year plus postage; and MYCOLOGIA, volumes 70-74 (1978-82), $5 per volume plus postage.

Fred Spiegel has reprints of most of the papers of the late Dr. G. T. Johnson available from either him or Dr. D. E. Talburt, also of the same department. See Mycologia 75: 395-399 (1983) for Dr. Johnson's list of publications.

Bob Harris will sell his book SHIITAKE GARDENING for $3.00 ppd.

The Collaborative California Universities-Mycology Research Unit (CCU-MRU) has a number (65) of reprints of recent research papers on Medical Mycology and related subjects. Request a list from Dexter H. Howard, CCU-MRU, Department of Medicine, Center for the Health Sciences, Los Angeles, CA 90024 (Attention: CCU-MRU Reprints).

Dean A. Glawe is willing to part with the following: PHYTOPATHOLOGY, 1956-1979, unbound, none missing, includes vols. 1-4 of the PROCEEDINGS AMER. PHYTOPATH. SOC, best offer; PLANT DISEASE REPORTER, vols. 33-61, no.'s 1-3 of vol. 64, includes PDR SUPPLEMENTS 185-262, available for shipping costs; ANNUAL REVIEW OF PHYTOPATHOLOGY, vols. 1-15, best offer. Contact Dean at: Dept. of Plant Pathology, Univ. of Illinois, N-519 Turner Hall, 1102 So. Goodwin Ave., Urbana, IL 61801.

C. L. Fergus has publications on many subjects that he is willing to sell. Contact him if you have any special interests.

Roger Goos has available JOURNAL OF BACTERIOLOGY, 1972-82.

George B. Cummins has for sale, THE RUST FUNGI OF CEREALS, GRASSES, AND BAMBOOS, 1971. Price is $15.00 plus postage, while they last. He has the last 36 copies by arrangement with the publisher.

Ralph Kurtzman wants to sell, TROPICAL MUSHROOMS, THEIR BIOLOGICAL NATURE AND CULTIVATION METHODS, by S. T. Chang and T. H. Quimio, 1982. Price is $42.95. He also has THE CHINESE MUSHROOM (Volvariella volvacea) by S. T. Chang, 1972, for the price of $8.95.

MSA still has BRIEF HISTORY OF MYCOLOGY IN NORTH AMERICA by D. P. Rogers, revised edition, $5.00. Make checks payable to MSA and send to MSA History, 20 Divinity Avenue, Cambridge, MA 02138.

G. C. Kaye has for sale, Vol. 18, Occasional Papers of the Farlow Herbarium. The volume, entitled TYPE STUDIES IN THE POLYPORACEAE 14. SPECIES DESCRIBED BY N. PATOUILLARD, EITHER ALONE OR WITH OTHER MYCOLOGISTS, is by Leif Ryvarden, Botanical Institute, University of Oslo.

C. Volbracht has for sale or exchange old mushroom books. Ask for a list.

Stanley Hughes has the following duplicates for exchange: ATAS (Univ. of Fed. Permanbuco), Vols. 2, 4, and 5; Plowright, 1899, BRITISH UREDINEAE AND USTILAGINEAE: Donk, 1933, REVISION.....APHYLLOPHORACEAE. II, 278 pp.; and Saccas, 1944, ETUDE MORPH. ET BIOL. DES FUSICLADUM DES ROSACEAE, 317 pp.

Sandra L. Anagnostakis will give away a duplicate set of MYCOLOGIA 72(1) to 74(2). Contact her at Dept. of Plant Pathology and Botany, CT Agric. Exp. Stn., Box 1106, New Haven, CT 06504.

Copies of the MSA DIRECTORY (1981) are still available free of charge to members. For nonmembers, the cost is $1.00. Write to Roger Goos for obtain one.

SUPPORT OUR SUSTAINING MEMBERS.
Saturday, June 25
All Day: Foray to Ledges State Park, near Ames, Boone Co., Iowa

Sunday, June 26
All Day: Meeting of the MSA Council

Monday, June 27
Morning: APS Penary Session
Afternoon: Session 1. Symposium: Taxonomy and Nomenclature of Fungi

Tuesday, June 28
Morning: Session 2. Contributed Papers: Taxonomy
Session 3. Contributed Papers: Ultrastructure
Session 4. Posters: Physiology, Ecology
Afternoon: Session 5. Contributed Papers: Taxonomy
Session 6. Contributed Papers: Ecology
Session 7. Posters: Ultrastructure, Medical Mycology, Cytology, & Morphology
Evening: General Banquet

Wednesday, June 29
Morning: Session 8. Contributed Papers: Physiology and Cytology
Session 9. Contributed Papers: Ultrastructure and Morphology
Session 10. Posters: Taxonomy and Genetics
Afternoon: Annual Lecture: Dr. Joseph Kuc
Session 11. Contributed Papers: Medical Mycology, Biochemistry, and Genetics
Session 12. Contributed Papers: Ecology
Evening: MSA Social

Thursday, June 30
Morning: MSA Breakfast and Business Meeting
Presidential Address: Dr. Harry D. Thiers

ABSTRACTS FROM THE ANNUAL MEETING

The annual meeting of the Mycological Society of America was held at Iowa State University, Ames, Iowa on June 26-30, 1983 in conjunction with the American Phytopathological Society and the Society of Nematologists. This year, the abstracts of papers presented at the meeting were printed and distributed in book form to all registered attendees. Because not all MSA members could attend the meeting and because of their informational value to the entire membership, the abstracts are included herein on the following pages.
HENRY C. ALDRICH and GREGORY W. ERDOS, University of Florida, Gainesville, FL 32611. Microcomputers in Mycology, or Computing on a Shoestring.

To increase efficiency of our laboratory, we began three years ago to learn how to tame microcomputers into tractable data base managers and word processors. Here we report successful experiences with Radio Shack equipment, chosen because of low cost and good local dealer support. We have developed and will demonstrate two types of literature citation storage and retrieval programs and a program for keeping track of herbarium specimens, all written in Level II BASIC and adaptable to any microcomputer using this language. We will provide program listings of these programs to anyone interested. Sophisticated word processing capability will also be demonstrated, providing excellent quality printouts suitable for submission of graduate theses, grant proposals, manuscripts, and camera-ready abstracts such as this one. We will make recommendations for and demonstrate a $1300 system containing 64K memory and capable of telephone communication, data storage and retrieval, word processing and "letter quality" printouts.

Aldrich, H. C., see Lingle, W. L.

Aldrich, H. C., see Testrake, D.

Allen, M. F., see Ianson, D. C.


Patterns of vegetation establishment, animal disturbances, and mycorrhizal fungal dispersion were contrasted between disturbed areas on Mount St. Helens and a Wyoming stripmine. On Mount St. Helens, plants were concentrated on gopher disturbances, old soil mixed with tephra and brought to the surface by mound and cast formation. Mycorrhizal fungi were also concentrated in this material with no spores present in the interspace areas. Early colonizing plants formed mycorrhizae but only on animal-disturbed sites. At the Wyoming stripmine, nonmycorrhizal, wind-dispersed annuals predominated and a low density of mycorrhizal fungal spores were widely dispersed. We hypothesize that early vegetation establishment on Mount St. Helens is highly dependent on animal-mycorrhiza interactions while it is dominantly wind-dependent on the Wyoming stripmine.

A. Alizadeh and P. H. Tosa. University of California, Los Angeles, CA 92521. Phytophthora capsici and 'P. palmivora'. Are they the same?

'Phytophthora palmivora' Morphological Form 4 (MF4) has characters similar, but not identical, to P. capsici. Some workers have renamed the former to P. capsici but without knowledge of variability. A comparative study of morphology, physiology, and electrophoretic protein patterns was made with 25 authentic or typical isolates of P. capsici and 28 isolates identifiable as MF4. Some MF4 isolates differed from P. capsici in the ontogeny, pedicel length, and base shape of sporangia, growth at 35°C and chlamydospore formation, but many other isolates were similar to P. capsici. Sex organ morphology, variable in both groups, was of little diagnostic value. With a few exceptions, bulk protein and isoenzyme patterns were similar between the two groups. Present species descriptions of P. capsici are incomplete, incorrect, or even contradictory among authors, hence unreliable for species identification. Renaming of MF4 isolates to P. capsici necessitates a redescription of the species.

JOSEPH A. AMMIRATI, Department of Botany, University of Washington, Seattle, WA 98195, and GERWIN KELLER, Fakultat fur Biologie, Universitat Konstanz, Postfach 5560, D-7650 Konstanz West Germany. Chemotaxonomic significance of Anthraquinone derivatives in North American species of Cortinarius in the subgenus Dermocybe, section Sanguinei.

In recent years anthraquinone pigments have been studied in the genus Cortinarius, particularly in the subgenus Dermocybe, and used as a means of better understanding basidioecarp coloration as it relates to the classification of species. In this study basidioecarps of North American species in Dermocybe section Sanguinei, were examined for the presence of anthraquinone derivatives by means of thin layer chromatography. A comparison of pigmentation data shows some more or less specific pigment patterns and in particular two groups of anthraquinones that represent the subsections Sanguinei and Cinnabarinell. Included in this study are several well known taxa, e.g., Cortinarius sanguineus, C. semisanguineus, C. phoeniceus var. occidentalis and C. californicus, as well as some new ones. A comparison will be made of European and North American species.
Anagnostakis, S. L., see Eilzey, J. T.

Anderson, J. B., see Horgan, P. A.


Variation in VAM spore counts taken from sample areas ranging in size from 200 cm² to 2,500 cm² is presented. This information was used to select the appropriate size quadrant for characterizing spore density and plant cover. A quadrant of approximately 600 cm² is considered to be suitable for simultaneously sampling plant cover and VAM spores. Spore counts taken from 25 cm x 25 cm quadrats were found to be positively correlated with plant cover (r = 0.64, p < 0.001) and negatively correlated with soil moisture (r = -0.72, p < 0.001). Transforming the spore count data using loge or square root functions did not appreciably improve the correlations.

Andresen, T. L., see Samuelson, D. A.

Ansel, M., see Thibault, M.

R. K. ANTIBUS. Department of Botany, University of Montana, Missoula, MT 59812. Acid Phosphatase Activities in Field-collected Douglas Fir Mycorrhizae.

During Fall 1982, soil and root samples were collected from litter-covered forest floor and well-decayed fallen logs in a pure stand of Douglas Fir at Lubrecht Experimental Forest near Missoula. Compared to forest floor samples, decayed wood demonstrated higher moisture contents (53 vs. 16%), higher organic matter content (76 vs. 7%) and lower pH values (4.5 vs. 6.1). Decayed wood most commonly yielded white tomentose basidiomycetous mycorrhizae and black (Cenococcum geophilum) mycorrhizae, while forest floor samples commonly yielded smooth flesh-colored mycorrhizae and black (C. geophilum) mycorrhizae. Acid phosphatase activities of these mycorrhizae were compared at pH 5.0, using a-naphyl phosphate as substrate. White tomentose mycorrhizae demonstrated the greatest activities at this pH; C. geophilum mycorrhizae showed the lowest activities on a dry weight basis. No significant differences were found to exist among the activities of the C. geophilum samples at pH 5.0, whether from decayed wood or forest floor soil.

Ashley, K. E., see Hill, R. A.

Bacon, C. W., see Hinton, D. M.

E.R. BARSW and D.T. KINGAID. Department of Biological Science, Lehman College, The City University of New York, Bronx, New York, 10468. Quantitative analysis of anemotropism in the mushroom \textit{Psilocybe cubensis}.

The directed growth of the basidiocarp of \textit{Psilocybe cubensis} into air flow (anemotropism) was investigated. Basidiocarps were placed in a wind tunnel under controlled conditions and anemotropism was evaluated in relation to the physical dimensions of the mushroom and to several environmental factors. When 'degrees of curvature per hour' was used as the measure of anemotropism, several dimensional characteristics were most significantly correlated with the rate of curvature. It was found that taller and thinner basidiocarps bend most readily if all other factors are equal. However if 'degrees of curvature per hour per increase in height' was used as the measure of anemotropism then the dimensional factors were no longer significantly correlated. In this case environmental characteristics become the most significant. Within the range of environmental characteristics that were studied the most influential factor regarding anemotropism was the humidity of the air. Evidence is presented to support the hypothesis that the cause of the bending is differential water loss from the windward versus the leeward side of the mushroom. This difference in water loss results in differential amounts of water reaching the pileus where a hypothetical growth factor is produced which causes stipe elongation. When deprived of sufficient water, the amount or activity of the growth factor is reduced. The result is less growth on that side of the stipe.

Barquet, J. J., see Gain, R. E.

Barro, S., see Dunn, P. H.

Barstow, W. E., see Lingle, W. L.

W. E. Barstow and W. L. Lingle. Department of Botany, The University of Georgia, Athens, GA 30602. Localization of DAB reaction products during minicycle zoosporogenesis in \textit{Allomyces macrognynus}.

Binucleate cells of \textit{Allomyces macrognynus} were induced to sporulate after only 1.75 hrs of growth. Papilla formation was complete in 75% of the cells 2 hrs after induction. Subsequent zoospore differentiation required 1 hr. DAB (3,3-diaminobenzidine) cytochemical localization of cytochrome oxidase, peroxidase, and catalase activities were carried out on growing and sporulating cells. Peroxidase activity was localized in microbodies and was not detected in the backing membrane of the developing microbody/lipid-globule complex. The control specific for peroxidase localization inhibited reaction.
product formation within microbodies, but did not inhibit
reaction product formation by cytochrome oxidase found within
mitochondrial cristae. No catalase activity was detected in
growing or sporulating cells.

G. F. BILLS, G. I. HOLTZMAN and O. K. MILLER. Virginia
Polytechnic Institute and State University, Blacksburg, VA
24061. Comparison of fruiting patterns of ectomycorrhizal
basidiomycetes between red spruce and northern hardwood
forests in West Virginia.

From June to October of 1981 and 1982, sporocarps of
basidiomycetes belonging to families with species proven to form
ectomycorrhizae were enumerated and mapped at 10 to 14 day
intervals in twelve 16 X 16 M permanent plots. The plots were
equally distributed between second growth stands of Picea
rubens and adjacent northern hardwoods dominated by Fagus
grandifolia, Prunus serotina, Betula alleghaniensis, Fraxinus
americana and Acer species located in the Monongahela National
Forest, West Virginia. More sporocarps are produced in red
spruce stands than in hardwood stands. The two forest types
have few associated ectomycorrhizal species in common. Species
diversity is compared between both forest types. Phenology of the
total number of sporocarps and selected major species is
presented. Spatial distribution of sporocarps and associations
among them and various tree species are briefly discussed.

Binder, F. L., see Gain, R. E.

G. N. Bistis. Drew University, Madison, N. J. 07940
The Serpentine Growth Phase and Chemotropism in Neurospora
crassa.

A correlation has been observed between a pattern of serpentine
growth in certain hyphae and their ability to respond chemo-
tropically to substances secreted by other cells in the same or
another strain. Those hyphal filaments that have the serpen-
tine pattern in this species are trichogynes, germ tubes of
microconidia, macroconidia and ascospores. These filaments are
also all chemotropic; positive in the case of trichogynes
turning toward fertilizing elements of opposite mating type,
and negative in the three cases of the germ tubes turning away
from those of like, neighboring spores. Some hyphal filaments
that don't grow in a serpentine fashion do not, also, exhibit
chemotropic behavior. These include ascogonium - and
conidiophore-bearing hyphae.

Blankenship, P. D., see Hill, R. A.

Blackwell, M., see Gilbertson, R. L.

M. BLACKWELL and R. L. GILBERTSON. Louisiana State University,
Baton Rouge, LA 70803 and University of Arizona, Tucson, AZ
85721. Cultural studies of wood-rotting Basidiomycetes from the
Sonoran Desert.

About 100 species of wood-rotting Basidiomycetes occur in the
Sonoran Desert of Arizona. One fifth of the species are
restricted to desert habitats and substrates; the others have a
broader range. Isolates of wood-rotting species from the
Arizona Upland Desert and several different elevations in desert
mountains were cultured at nine temperatures on malt extract
agar. Species which are frequent in and restricted to the
desert usually have a characteristic growth pattern when
compared to fungi not often occurring in the desert: 1) faster
growth rate, 2) higher growth temperature optima, and 3)
broader growth temperature range. Although one might expect an
additional group of species to be active in the cooler winter
months of this warm winter desert, this is not so. The mycota
of wood-rotting Basidiomycetes consists of species which are
active in both summer and winter whenever moisture is adequate
and warmer temperatures are available.

R.L. BLANTON and M.S. FULLER. Botany Department, University of
Georgia, Athens, GA 30602. The Development of the Discharge
Apparatus of a Multi-Pored Species of Rhizophydium.

The development of the discharge apparatus of a multi-pored
species of Rhizophydium has been studied with light microscopy
and scanning and transmission electron microscopy. Cells grown
in liquid nutrient medium for 40 hours were induced to differen-
tiate upon transfer to non-nutrient medium. The earliest indi-
cation of discharge apparatus development, 6 hours post-in-
duction (h PI), was the appearance of lens-shaped, golgi-derived
fibrillar deposits at several locations between the cytoplasm
and the sporangial wall. By 7-8 h PI the deposits were enlarged
and the wall regions above were weakened and bulged to form the
eyearly papillae. Expansion of the lens deposits continued until
between 8 and 9 h PI the sporangial wall above the deposits
ruptured and the papillae attained their characteristic mature
form. At 14-15 h PI, after zoospore cleavage, the gelatinous
papillar mass expanded, the spore mass moved into the
expanded plug material, and the spores dispersed. Supported by
an NSF grant to Melvin S. Fuller.
zosporo-genesis in Olpidiopsis sp. will be compared with the process in other Oomycetes which produce larger zoospores.

T.M. Bourett and D.J. McLaughlin. Univ. of Minnesota, St. Paul MN 55108. Mitosis in the basidiomycete Helicobasidium mompa.

Mitosis was observed with differential interference microscopy in a dikaryon. In addition hyphae grown on coverslips were fixed in glutaraldehyde and dividing nuclei selected with fluorescence microscopy after mithramycin staining. Following postfixation and flat embedment, the preselected cells were serially sectioned and examined with the EM. The externalized premitotic spindle pole body(SPB) consists of two layered discs connected by a middle piece. At prophase the nucleus becomes polarized into karyokinetic and nucleolar phases. By metaphase the nucleolus resides in a nuclear evagination. A metaphase plate is absent, and the SPB discs at the ends of the central spindle occupy a gap in, but do not abut, the nuclear envelope. The cytoplasmic side of each SPB disc is sheathed by a cap of ER. Shortly after mitosis, a septum is initiated at the site previously occupied by the metaphase nucleolus. The SPB morphology of H. mompa shows similarities to that found in the Uredinales, but some aspects of division resemble those in other Heterobasidiomycetes.

J. P. BRASELTON. Department of Botany, Ohio University, Athens, OH 45701. Zoospores of Spongospora subterranea (Plasmodiophoromyctes).

Tomato seedlings were dusted with resting spores (spore balls) of Spongospora subterranea and grown in sand with nutrient solution. Mature sporangia were evident in root hairs within two weeks. Nuclei of zoospores were predominantly electron-opaque with electron-translucent regions. Kinetosomes (basal bodies) were 800-900 nm long and occurred in pairs that described a 20-25° angle with respect to each other. In cross section kinetosomes were in the nine-three pinwheel configuration. Microtubule rootlets extended from the base of each kinetosome to the plasmalemma.


Hypomyces chrysospermus is a common parasite of bolete fruitbodies. In nature it is seen most frequently in its Sepedonium anamorph. In axenic culture it produces a Verticillium anamorph, but not the Sepedonium stage. The latter stage, however, is readily produced if vegetative mycelium of the proper bolete host is provided. The following potential hosts have been tested for their ability to stimulate production of the Sepedonium stage: Suillus (several species), Gyrodon eryngii, Boletus affinis, Tylopilus felleus, Rhizopogon (several species), Hyphophyopsis aurantiaca, Boletillus chrysenteroides, Xerocomus (2 species), and Phylloporus rhodoxanthus. Only the latter three species were found to readily stimulate production of the Sepedonium stage. This apparent specificity is surprising since in nature the Sepedonium stage frequently occurs on the fruitbodies of a broader range of host species.

Burdall, H. H., Jr., see Nakasone, K. K.

Burg, W. R., see Wicklow, D. T.

TERESITA I. CAIPELLO. Plant Pathology Department, Cornell University, Ithaca, NY 14853. Type studies of Strossmayeria (Helotiales), and cultural studies proving its connection to Pseudospiropes (Hyphomycetes).

The genera Strossmayeria (inoperculate Discomycetes) and Pseudospiropes (Dematiaceae) are wood-inhabiting saprophytes occurring together in nature in a constant association. Neither fungus is parasitic on the other, and Pseudospiropes is the anamorph of Strossmayeria. Single ascospore cultures of species of Strossmayeria consistently yielded species of Pseudospiropes. The teleomorph has, however, never yet been produced in axenic culture. Though species of Pseudospiropes have generally been called Helminthosporium in the literature, their conidia are blastic and not tetric. Thus the apparent anomaly of an Helminthosporium connecting to a unitunicate Discomycete instead of to a bitunicate Pyrenomycete is resolved.

Type studies show that Strossmayeria sphenospora and S. viridi-atra must be excluded from the genus.

RICHARD N. BORTNICK and MARTHA J. POWELL. Miami University, Oxford, Ohio 45056. Zoospore formation in Olpidiopsis sp.

The minute zoospores of the parasitic Oomycete, Olpidiopsis sp., contain an array of compactly arranged single-membrane bounded organelles. Morphometric analysis is used to determine relative volumes occupied by these structures. The origin of these single membrane bounded organelles and their arrangement prior to and during cytoplasmic cleavage will be outlined. Zoosporo-genesis in Olpidiopsis sp. will be compared with the process in other Oomycetes which produce larger zoospores.
Carmichael, J. W., see Currah, R. S.

I. CHARVAT, E. LOESCH, AND W. LILLY. University of Minnesota, St. Paul, MN 55108. Southeast Missouri State University, Cape Girardeau, MO 63701.
Specific activities of B-N-acetylglucosaminidase in homokaryotic and dikaryotic colonies of Schizophyllum commune grown under phosphate stress.

Homokaryotic and dikaryotic colonies were grown for 4 to 16 days on membranes on the surface of a defined solid minimal or low phosphate media. Colonies of all ages grown on low phosphate concentrations had smaller diameters and a significant decrease in total extractable protein. The specific activities for 4 day old colonies of the homokaryon and dikaryon grown on low phosphate media were greater than colonies grown on minimal medium. A linear correlation exists between specific activity and the phosphate concentration for both the homokaryon and dikaryon. From 4-12 days both colonies had higher specific activities when grown on 10 uM phosphate versus minimal medium and both reached their peak of activity at 10 days.

Cole, R. J., see Hill, R. A.
Conner, R. N., see Mims, C. W.
Cotter, D. A., see Glaves, M. L.
Cotter, D. A., see Seshadri, J.


During the course of a monographic study of the Onygenaceae, a number of new isolates have been recovered from soil, dung and other substrata collected from the Milk River area of southern Alberta. Included among these are Shanorella spirotricha, Arachniotus ruber, Xynophila mephitale and Aphanascus fulvescens. Representing a diversity of peridial morphologies, from scarcely differentiated peridial hyphae to pseudoparenchymatous construction, these taxa will be discussed with reference to their morphology and taxonomic affinities within the Onygenaceae.

K. J. CURRY. Natural History Museum, Los Angeles, CA 90007. Ascosporogenesis in Dipodascopsis tothii (Hemiascomycetes).

The ascus of Dipodascopsis tothii (Zsolt) Batra & Millner contains about 100 uninucleate spores at maturity. Each nucleus is delimited individually by a double unit membrane, i.e., there is no ascus vesicle. This spore delimiting membrane, or spore vesicle, develops from a point between the nuclear envelop and a spherical, osmiophilic body of unknown composition after nuclear division is complete. These osmiophilic bodies have been observed in the ascus of D. tothii, but not in the somatic cells. Each newly formed spore contains a single nucleus and at least one mitochondrion. The osmiophilic bodies remain in association with the spore vesicle as wall material is deposited between the two membranes of the vesicle. At spore maturation the osmiophilic bodies are gone.


There are several distinct structures associated with the septal pores of ascomycetes. The septal structure of the somatic cells in members of the Pezizales has not been reported in any other ascomycetous order. It is widespread, but not universal, in the Pezizales. The reproductive cells, asci and ascogenous hyphae, show several types of organelles associated with septal pores which we feel may be correlated with family groups within the Pezizales.


Septal structure of asci, ascogenous hyphae, paraphyses, and excipular cells in the apothecia of nine species of Pezizaceae were examined at the ultrastructural level. Electron dense, convex and biconvex bands were found associated with the septa at the base of young asci and associated with ascogenous septa. The septal pore in older cells became occluded with electron dense, amorphous material, and in some cases secondary wall material developed over the pore. The septa of paraphyses had either convex bands or lamellate structures often with associated Woronin bodies. A consistent feature of the septa of excipular cells was the presence of lamellate structures and Woronin bodies adjacent to or sometimes located within the pore. None of the septal types observed appeared to be of taxonomic value at or below the generic level. We recognize the lamellate structure in somatic cells as
the Peziza septal type which is associated with members of Pezizales, and we contrast it to the Neurospora septal type found in other ascomycetes.

Curry, K. J., see Kimbrough, J. W.

Das, A., see Roy, A.

Demsar, I. H., see Seshadri, J.

Dickman, L. A., see Anderson, R. C.

T. E. Dolan. Botany Department, University of Georgia, Athens, GA 30601. The mitotic apparatus of Monoblepharella sp.

The structural components of the mitotic apparatus in germlings of Monoblepharella sp. have been analyzed using serial section reconstruction from electron micrographs. Mitosis is intra-nuclear. The nuclear envelope bears polar fenestra formed by spindle incursion at late prophase. The nucleolus persists throughout mitosis, sequestered in a pocket of nucleoplasm at metaphase and expelled from the nucleus with an interzone at late telophase. Evidence suggests that initial separation of chromosomes at anaphase is accomplished by a shortening of kinetochore microtubules. The mitotic spindle contains few continuous microtubules. Mitosis in Monoblepharella sp. is similar to that described for members of the Chytridiales and Harpochytriales but differs significantly from mitosis in blastocladialean fungi. This point will be discussed with reference to Chytridiomycete phylogeny.

Dorner, J. W., see Hill, R. A.

Dowsett, J. A., see Hopkin, A.

J.A. Dowsett and J. Reid. University of Winnipeg, Winnipeg, Manitoba R3E 2Z9 and the University of Manitoba, Winnipeg, Manitoba R3T 2N2. Light and electron microscopical studies on the predaceous hyphomycete Dactylella cionopaga Drechs.

Dactylella cionopaga initially traps nematodes by means of 2-celled adhesive knobs. Such knobs, which have not trapped nematodes, may undergo further differentiation and anastomosis to form 2-dimensional, somewhat scalariform adhesive networks. Light and electron microscopic studies were carried out comparing the trapping mechanism of this fungus with that of Dactylaria candida (Nees) Sacc., an adhesive knob trapper, and Dactylaria scaphoides Peach, an adhesive network trapper.


Previous work has shown chaparral soil to have a substantial heat activated fungal community. It is efficient at quickly stabilizing sterile ash and soil against rain splash erosion. Laboratory studies used soils with an intact heat shock fungal community layered over with sterile soil covered with ash. The ash was inoculated with one of two heat shock fungi. Controls did not have the heat shock fungal inoculation of the ash. Measured at daily intervals, the rate of rain splash erosion was similar for all treatments. Laboratory studies indicate that there should be no rain splash erosion reduction due to inoculating post-fire chaparral with additional heat shock fungi unless the soil has been sterilized by an unusually hot fire or a hot fire over a moist soil.

Dumont, K. P., see Haines, J. H.


A small, single-celled, colorless protist with slow gliding motility has been frequently observed when isolating labyrinthulas from marine grasses and algal detritus from both the Atlantic and Pacific coasts of the U.S. The ovoid cells are ca. 3.5 x 5.0 μm in size and typically have a single prominent refractive granule. Fine filamentous, branched ectoplasmic elements which extend from both ends of the cell for up to 15 μm direct their motility. EM observations reveal that the cell walls are composed of Golgi-derived, thin scales; that the refractive granule is lipoidal and that the ectoplasmic elements do not arise from a specialized organelle such as a sagenogen. From these observations and comparisons with known protists, we suggest that the organism is a new species of Diplophrys.
Somatic nuclear divisions in sporangiogenous plasmodia of Woronina pythii were studied with transmission electron microscopy. Except for polar fenestrations, the original nuclear envelope remained intact throughout the mitotic division. Intracellular membranous vesicles appeared to bleb off of the inner membrane of the original nuclear envelope, adhered to the surfaces of the separating chromatin, and eventually formed the new daughter nuclear envelope within the original nuclear envelope. During the first 24 h of vegetative plasmodial growth, each telophase nucleus exhibited an obvious constriction of the original nuclear envelope in the interzonal region. Similar constrictions were not evident in telophase nuclei found in 24-36 h old plasmodia. This variation in the ultrastructural morphology of cruciform division appears to be related to the age and size of each sporangiogenous plasmodium, and is the first to be documented within this group of fungal pathogens.

The involvement of the basidiomycetous yeast Cryptococcus albidus in the spoilage of preserved fruits has already been established. Its pectic enzymes, however, are scarcely known. The paper reports on the ability of this microorganism to grow on pectic substances and to release pectic enzymes into the culture medium. The enzyme (polygalacturonase, E.C. 3.2.1.15) was induced by the substrate (pectin or Na polypectate); no activity, in fact, was detected when the carbon source was either glucose or saccharose. The highest level of enzyme activity (ca. 16.0 W/ml) in the cell-free culture broths was obtained when the yeast was grown for 72 hours in a synthetic medium containing 2.0% low methoxyl industrial pectin. The kinetics of enzyme production during growth on this substrate is reported. A partial characterization of the enzyme has also been carried out in the cell-free culture broth.
Dictyostelium discoideum will deactivate when exposed to low
activation parameters upon the germination of 3 day old SG1
spores suspended in phosphate buffer. Also, a direct correlation between the levels of $\gamma$-linolenic acid in host mycelium and degree of parasitism was found.

A variety of wood-rotting Basidiomycetes decay living and dead bark and wood of Quercus virginiana. Among the more interesting are two poorly known species which appear to be restricted to bark of the living live oaks. *Poria beaumontii* is easily distinguished from morphologically similar species of *Poria* by its distinctive ecological niche, usually the underside of lower branches and the upper trunk. *Hyphoderma* sp. grows on trunks at the edge of rain tracks. Outer bark is flaked off by the action of this fungus. Both species are common on live oaks wherever they have been looked for. Both fungi are slow growing on common agar media and exhibit multiple allelic mating systems.

T.R. Gottwald and W.L. Tedders. USDA-ARS, P.O. Box 87, Byron, GA 31008. Suppression of pecan weevil populations with entomopathogenic fungi.

Field and greenhouse trials utilizing entomogenous fungi to control pecan weevil populations demonstrated 72% and 49.8% mortality of adults following exposure to *Beauveria bassiana* and *Metarhizium anisopliae* inoculum, respectively. In addition 44.4% and 27.8%, respectively, untreated adult weevils developed the disease when caged with a single adult contaminated with either pathogen. Larval mortality of 29.6% for *B. bassiana* and 6.0% for *M. anisopliae* was achieved with soil applied inoculum. Conidial release by both fungi from diseased adult pecan weevils was studied under controlled conditions of relative humidity (RH), temperature, vegetative wetness (WV) and red-infrared radiation (IR). Decreasing RH and sustained RH below 40% stimulated spore liberation by both fungi which was further enhanced by exposure to IR $>40\mu m^{2} \cdot Sec^{-1}$ and vibrations. *B. bassiana* consistently released 10 to 200 times more conidia than *M. anisopliae* from an equivalent number of infected weevils.
Goettel, M. S., see Sigler, L.

D. H. GRIFFIN, P. D. MANION and L. GUSTAVSON. College of Environmental Science and Forestry, Syracuse, NY 13210. Variation in virulence of Hypoxylon mammatum for its host, Populus tremuloides as measured by canker development and toxin bioassay.

Five single ascospore isolates of H. mammatum were tested for virulence against nine clones of P. tremuloides. Mycelium infested grain cultures were placed in 4 mm circular wounds made in second season branches of 10 year old trees planted in a randomized block design in a garden plot. Measurements of canker length, callus formation and branch death symptoms caused by the isolates were made at 4, 12 and 15 months. Toxic culture filtrates of the fungal isolates were tested for activity in leaf spot bioassays. All bioassays for virulence showed significant differences among the isolates, but gave very little correlation between the assays suggesting that each assay responds to different virulence characteristics of the fungus.

M. GUNASEKARAN. Fisk University, Nashville, TN 37203. Properties of Phenylalanine Ammonia-lyase purified from Pyrenochaeta lycopersici.

Phenylalanine ammonia-lyase (PAL; E.C.4.3.1.5) which catalyzes the conversion of trans-cinnamate from L-phenylalanine by deamination was purified (more than 200 fold) from the cell-free extracts of Pyrenochaeta lycopersici. The purification procedure involved protamine sulfate precipitation, ammonium sulfate fractionation and ion exchange chromatography. The enzyme was most active at pH 8.5 and at 30°C. The Km value for L-phenylalanine was 0.9mM. No cofactors or divalent cations were required for the enzyme activity whereas substrate analogs such as benzoic and p-coumaric acids were inhibitory. PAL synthesis in P. lycopersici was maximal in the stationary phase of growth. Highest enzyme production was detected when L-phenylalanine (0.25%) was added in the basal growth medium.

Gustavson, L., see Griffin, D. H.

Gwin, R. M., see Samuelson, D. A.


An intensive study of tropical Hyaloscyphaceae finds undescribed species and at the same time extensive lists of synonyms. This problem is partly due to the fact that most tropical fungi were described by taxonomists who never saw the organisms in their natural habitats, and is aggravated by the preserving methods favored by nineteenth century tropical collectors. The scleosporous, wood inhabiting species are pan tropical but have elevational preferences. Nine taxa in this group are separated microscopically by spore shape and macroscopically by hair pigment and resin secretions. The genera used for long-spored species of Hyaloscyphaceae were reviewed. Erinella, Erioscyphella, Erioscypha and Erinellina are rejected on Taxonomic or Nomenclatorial grounds and Dasyycyphus and Dasyycyphella are used in a different sense.

Hamner, J. D., see Seshadri, J.

R. T. HANLIN. Dept. of Plant Pathology, University of Georgia, Athens, GA 30602. Taxonomic Criteria Used in Classifying Plant Pathogenic Fungi.

During the past two decades major changes have occurred in the classification of ascomycetous and deuteromycetous fungi, resulting in the renaming and rearranging of many species of plant pathogens. These changes reflect new information accumulated in recent years and the consequent development of new concepts of the relationships among fungi in both groups. From these new concepts there have been developed new criteria that form the basis for the current taxonomic arrangements. Criteria utilized in the classification of ascomycetes include the basic pattern of development of the ascocarp (ascohymenial or asco-loculate), the structure of the ascus and manner of ascospore discharge (prototunicate, unitunicate, or bitunicate), and the structure of the ascocarp centrum. In the deuteromycetes conidium ontogeny is the primary new criterion utilized in classification. An ultimate objective is a classification based on the holomorph (anamorph-teleomorph connections) for both groups.
An Unusual Tropical Powdery Mildew.

During the past four years a fungus has been observed on cotton plants in test plots at the Graduate Plant Pathology Laboratory of the Universidad Centro Occidental near Barquisimeto in western Venezuela. The fungus forms patches of superficial, white mycelium on the surface of the leaves. Small, globose, ascocarps are produced on the mycelium. They are completely enclosed and have hyaline walls composed of one to two layers of flattened cells. Each ascocarp contains a cluster of three saccate asci, inside of which are five oval, hyaline spores. Ascocarp appendages are lacking. This fungus has been identified as a species of Brasilomyces, an unusual member of the Erysiphaceae described from Brazil by Viegas in 1944, and reported only occasionally since.

Haskins, E. F., see McGuinness, M. D.

E. F. Haskins and M. D. McGuinness. Department of Botany, University of Washington, Seattle, WA 98195. Light and electron microscopical studies on Semimorula liquescens and selected species of Echinostelium and Cavostelium.

Semimorula liquescens is a protoplasmodial slime mold which produces sessile fruiting bodies. The possible affinity of this organism with selected species of Echinostelium and Cavostelium has been assessed using comparative light and electron microscopical studies.

Don E. Hemmes. University of Hawaii at Hilo, Hilo, HI 96720. Ultrastructural aspects of calcium mediated germination in cysts and sporangia of Phytophthora palmivora.

Calcium salts stimulate direct germination of cysts and sporangia of Phytophthora palmivora. The addition of exogenous calcium chloride to zoospore suspensions triggers immediate encystment. Synchronous germ tube production follows within twenty minutes. In contrast, less than 10% of zoospores encysting in calcium-free solutions emit germ tubes. The majority of these cysts function as microsporangia and differentiate a secondary zoospore and an exit pore. Calcium salts, added in the presence of a calcium ionophore, prevent cytoplasmic cleavage and induce direct germination in sporangia. Multiple germ tubes rupture the sporangial wall. Strontium was the only other cation which would stimulate germ tube production in these spores. The ultrastructural aspects of calcium mediated germination will be discussed.

Hemmes, D. E., see Stasz, T. E.

Hendrix, J. W., see McGraw, A.-C.

Hendrix, J. W., see Kiernan, J. M.

James W. Hendrix, Hakam S. Modjo, and A.-C. McGraw, Department of Plant Pathology, University of Kentucky, Lexington, 40546. Mycorrhizal fungi in tobacco production.

Endogonaceous fungi, components of agricultural soils, are often assumed to be beneficial to crops. Four lines of evidence indicate that mycorrhizal fungi are not beneficial to tobacco production. In the field, tobacco plants grown in fumigated (methyl bromide 67%-chloropicrin 33%) soil developed faster vegetatively and reproductively and often yielded better than plants grown in nonfumigated soil. 1) Root colonization and 2) sporulation by certain species, notably Glomus macrocarpus, failed to increase in the root systems of plants grown in fumigated soil. 3) When soil was fumigated in a wide strip and planted to tobacco, propagule populations, determined by the 'Most Probable Number' technique, were zero, even at the end of the growing season. 4) Pure cultures of G. macrocarpus severely stunted tobacco plants, and the development of mycorrhizae was correlated negatively with growth. Mycorrhizal fungi may be deleterious to tobacco.

Hennen, J. F., see McCain, J. W. ("The 100th Anniversary ...")

Hennen, J. F., see McCain, J. W. ("Protosorus ...")

C. W. Hesseltine, R. F. Rogers, and O. L. Shotwell. Northern Regional Research Center, ARS, USDA, Peoria, IL 61604. Occurrence of Fungi Associated with Scabby Wheat.

During 1982, scabby wheat occurred in winter wheat in certain areas of the United States. Fortunately, we were able to secure approximately 160 carefully selected representative samples from these areas. Shortly after harvest, these samples were subjected to mycological examination by plating surface-
sterilized kernels onto agar plates to determine the occurrence of Aspergillus flavus, A. niger, other aspergilli (except A. glaucus), Fusarium graminearum, Penicillium, and Mucorales. Infection of the wheat kernels ranged from 0 to 72% for F. graminearum and from 0 to 82% for A. flavus. We do not know whether the wide incidence found of A. flavus and A. niger had developed in the field during seed development in rainy weather or whether they had grown in storage.

R. A. Hill1, R. J. Cole2, D. M. Wilson3, T. H. Sanders2, P. D. Blankenship2, K. E. Ashley1, and J. W. Dorner1. 1University of Georgia, Tifton, GA 31793, and 2USDA National Peanut Research Laboratory, Dawson, GA 31742. Species of the Aspergillus flavus group associated with southeastern corn and peanuts: Their occurrence, taxonomy, and mycotoxin production. About 90% of green Aspergillus flavus group isolates from corn (1978, 1979) and peanuts (1980, 1981, 1982), grown in southern Georgia, were identified as A. flavus Link and the remainder as A. parasiticus Speare. Virtually all aflatoxin (AF) positive corn and peanut samples contained AF B1 and about 60% contained AF B2. AF G1 and/ or G2 occurred in 10 to 20% of AF positive samples (except for peanuts in 1980 when more than 40% of samples contained AF G1, G2). In vitro, 60 to 70% of the A. flavus isolates were toxigenic and produced one or more of AF B1, AF B2 and cyclopiazonic acid (CPA); whereas A. parasiticus, with all isolates toxigenic, produced one or more of AF B1, AF B2, AF G1 and AF G2, but never CPA. Isolates were grown on malt extract agar, Czapek's solution agar and peanut meal agar, incubated at 25° and 37°C.

D. M. HINTON and C. W. BACON. USDA/ARS, Russell Research Center, Athens, GA 30613. Ultrastructure of endophytic fungi in prairie wedgegrass and tall fescue.

Hyphae of Epichloë typhina from prairie wedgegrass were intercellular, occupying the spaces between pith cells of flower stems, and throughout the mesophyll of the leaf. In tall fescue, intercellular hyphae were also found in the intercellular spaces of the stem, but in the leaf hyphae were only found in mesophyll between the leaf sheath and ligule. In leaves of both grasses, intercellular hyphae were found also between the middle lamella. In both grasses there was no apparent alteration to host cells adjacent to intercellular hyphae. Inter cellular hyphae in prairie wedgegrass appeared normal and contained the usual cytoplasmic organelles. However in fescue very few typical fungal cytoplasmic organelles were found, the fungal plasma membrane was damaged, and numerous secretory vesicles and lomasome-like bodies were found within the fungal cell near the plasmodesmata of the host.

W.E. Hintz and P.A. Horgen, Department of Botany, University of Toronto, Erindale Campus, Mississauga, Ontario L5L 1C6 Developmental changes in Achlya ambisexualis during female sexual morphogenesis.

Previous work from this laboratory has reported the morphological events associated with oogonial stimulation of female A. ambisexualis. We have hypothesized that these changes in cell morphology reflect a restructuring of the cytoskeletal organization. Changes in the soluble protein pool during oogenesis were quantified by SDS polyacrylamide gel electrophoresis (PAGE) and densitometry. The in vivo level of a 48 K dalton protein was repressed during cytoplasmic aggregation and remained repressed during initial induction and oogonial expansion. There was a quantitative increase in the level of a 43.5 K dalton protein during oogenesis reaching a maximum during initial induction. Cytochalasin B inhibited oogonial formation thus implicating the cytoskeletal protein actin in this process. Western blots of the SDS PAGE gels were reacted with antibodies against rabbit muscle actin followed by reaction with 125I labelled Protein A. Changes in the level of the fungal actin during development were monitored by autoradiography of the western blots.

Hoch, H. C., see Newhouse, J. R.

Holtzman, G. I., see Bills, G. F.

Hopkin, A., see Punter, D.


The development of selected stages in the life cycle of Catenaria anguillulae were studied employing light and electron microscopy, from the late stages of germ tube development, through the production of the prosporangial vesicle, and to the final development of the zoosporangium containing zoospores. The studies emphasized an examination of the morphological and ultrastructural changes associated with the formation of the prosporangium from the germ tube, the ultra-
Structural changes associated with zoospore initiation and maturation, the development of the exit tube and the subsequent release of the zoospores.

P.A. Horgen, A.L. Franklin, J.B. Anderson and W.G. Filion, Department of Botany, University of Toronto, Erindale Campus, Mississauga, Ontario. Newly released motile spores from resistant sporangia of Blastocladiella emersonii are haploid.

It has been previously reported that synaptonemal complexes occur during development of resistant sporangia (RS) of B. emersonii. Furthermore, based on attempts to measure DNA content/107 zoospores, it was concluded that RS zoospores had similar DNA contents to zoospores released by ordinary colorless (OC) sporangia. Utilizing a technique which involves the in situ measurement of nuclear DNA content using the DNA-binding antibiotic, mithramycin, we have compared DNA contents of motile spores released from OC and RS. Measurements were made with a photomicroscope equipped with an epi-fluorescence illuminator and a photometer. Nuclear-DNA measurements in known haploid and diploid strains of Aspergillus nidulans confirmed the validity of the technique. Examining newly released RS spores that had been induced with KHC03, NaCl, KCl or NH4Cl, we found the DNA content per spore to be 1/2 that of spores released from OC.

Horgen, P. A., see Hintz, W. E.

Horgen, P. A., see Horton, J. S.

Horn, B. W., see Wicklow, D. T.

J.S. Horton and P.A. Horgen, Department of Botany, University of Toronto, Erindale Campus, Mississauga, Ontario. Steroidal regulation of proteins during sexual morphogenesis of Achlya.

Protein changes during the sexual development of the male strain A. ambisexualis (E87) were investigated. Matings between A. ambisexualis (E87) and the female strain, A. ambisexualis (734), were performed in both still and liquid culture in order to study the ontogeny of the male sexual structures from antheridial branch formation to oogonial contact and delimitation of antheridia. Quantitative but no qualitative changes were detected during the course of sexual development when SDS-soluble proteins were analyzed on Coomassie blue and silver-stained gels. However, fluorography of 35S-methionine-labelled proteins revealed the qualitative synthesis of a 63 K dalton protein coincident with antheridial branch formation. This protein was detected in A. ambisexualis (E87) cultures induced to differentiate sexually by mating with the female strain 734 and by the addition of the steroid pheromone antheridiol. The identity of this protein is now being investigated.


A detailed account of particle transport in living hyphae has been documented for the first time. Video-enhanced contrast-differential interference contrast microscopy of G. persicaria revealed a massive bidirectional particle movement that was confined primarily to channels. Orthograde (toward the tip) and retrograde movement occurred within the same channel. Particles moving in opposite directions, at ca. 3 μm/sec, were seen to collide and then to continue as before. This would argue against a transport mechanism based upon electrophoresis. Organelles somewhat larger exhibited intermittent saltatory movement in channels. This would argue against a mechanism based upon bulk flow. The presence of cytoplasmic microtubules and microfilaments within channel configurations and closely associated with various types of vesicles was revealed in freeze-substituted specimens by transmission electron microscopy. This would support a transport mechanism in which elements of the cytoskeleton participate.


Take-all root, crown and foot rot caused by Gaeumannomyces graminis var. tritici is a serious disease of wheat. Predisposition of wheat to take-all following soybeans is increased by liming. Soybeans following severely diseased wheat on coarse-textured soils frequently exhibit Mn deficiency symptoms in localized areas corresponding to areas of severe take-all. Soil tests failed to indicate differences in Mn between areas with severe take-all and adjacent areas where disease intensity was light. Mn deficiency symptoms of soybeans were removed by application of Mn-EDTA except in areas of severe take-all. Simultaneous injection of Mn-EDTA with Mg preplant to wheat reduced disease severity resulting in 30% yield increases for both take-all susceptible and tolerant varieties. Biologically reduced availability of Mn in the rhizosphere following soybeans, consecutive wheat cropping, liming and manuring appears to predispose wheat to take-all.
Spatial patterns of organic matter, nutrients, soil moisture and mycorrhizal fungi were studied on a micro-scale (between shrub units) and meso-scale (between shrub units) at adjacent undisturbed and stripmined sites in a Wyoming shrub steppe. Organic matter differed between shrub units but did not differ within a shrub unit. Mycorrhizal fungi and soil N were concentrated in the soil under the shrubs. Spore numbers differed among species but did not change among shrub units. Soil moisture values were the same within and between shrub units. We concluded that shrubs act as a wind break creating higher organic matter, N and a favorable environment for mycorrhizal fungi and that vegetation reestablishment may depend on wind deposition of soil microbes and organic matter.

Perithecia of Diaporthe phaseolorum var. sojae develop from initials that are typically associated with the stromatic conidioma of the Phomopsis stage. Initials are formed by a multicellular ascogonial coil that becomes surrounded by enveloping hyphae. The envelope hyphae ultimately differentiate into an outer peridium, a prominent centrum pseudoparenchyma layer and paraphyses. Peridial and centrum hyphae in the apical region proliferate early in development and produce an elongate, periphysis-lined neck. The cells of the non-ascogenous tissues are multinucleate except for the paraphyses which are uninucleate. The ascogenous system develops from the terminal portion of the ascogonial coil by septation of coil cells and production of short ascogenous hyphae. The ascogenous hyphae ramify and form a hemispherical hymenium where asci are produced from croziers. The asci become detached from the hymenium and fill the centrum, compressing paraphyses and pseudoparenchyma. Development of D. phaseolorum var. sojae is believed to be a variation of the basic developmental pattern known in other Pyrenomycetes.

The average number of spores borne upon each basidium declines as the carpophore matures, particularly in tetrasporic species. The percentage of tetrads falls as greater (and sometimes predominating) numbers of triads and diads are produced. This trend is accelerated by removal of the sporocarp from its substrate.

A consistent pattern of changes in the size, shape, and wall chemistry of basidiospores has also been observed. Initially, hyaline, dextrinoid spores which may be relatively shorter and more globose are liberated. Subsequently, longer, inamyloid, pigmented ones are produced; in sequential deposits the average size of these spores again declines. Harvesting (and sectioning) the carpophore may exaggerate this trend.

J. M. Kiernan, J. W. Hendrix, D. M. Maronek, and L. P. Stoltz. Departments of Plant Pathology and Horticulture, University of Kentucky, Lexington 40546. Production of strawberry plants colonized with specific endogonaceous fungi for field planting. Strawberry plants propagated from tissue culture were inoculated with spores of three endogonaceous fungi or not inoculated, and grown in 1 peat:perlite containing 4.5 g/liter of the slow-release fertilizer 18-6-12 Osmocote. After 4.5 months, shoot dry weights were increased by Glomus mosseae, G. epigeus, and G. constrictus, and the shoot/root ratio and runner production
were increased by G. mosseae, G. mosseae and G. epigaeus colo-
nized the roots (27 and 14%, respectively), but colonization by G. constrictus was not detected at this time. Plants were transplanted into fumigated field plots. After 10 wk, daughter plants appeared to become colonized by indigenous fungi, rather than those originally on the mother plants.


Simple, uniperforate septa with Woronin bodies in close proximity to the pore have come to be recognized as a characteristic feature of most ascomycetes. A wide variety of other organelles, however, have been discovered in association with pores in different cells and tissues in the ascomycetes. These have been referred to as hexagonal crystalloids, septal pore plugs, lamellate structures, convex bands, layer cysternae, etc. This paper reviews the types of pore organelles that are found in the septa of various ascomycetes and explores the possibility that these structures may be of importance in establishing relationships within and among ascomycetous taxa.

Kimburg, J. W., see Curry, K. J. ("A Preliminary Survey ...")

Kimburg, J. W., see Curry, K. J. ("Septal Structures ...")

Kincaid, D. T., see Badham, E. R.

M. A. Klitch. USDA, ARS, Southern Regional Research Center, P.O. Box 19687, New Orleans, LA 70179. Autecological studies of Aspergillus flavus in cottonseed.

Many fungi enter crop seeds prior to harvest. One such fungus, Aspergillus flavus Link ex Fries, is of special interest because it may produce aflatoxin, a carcinogen in cotton and other crop seeds. In laboratory and field experiments, A. flavus was introduced to various parts of the cotton plant and later reisolated from the inoculated plant part and mature seed. Inoculation of various flower parts increased the number of A. flavus infected seeds in the resultant bolls. Plants inoculated at the cotyledonary node at the 4-6 true leaf stage produced bolls with a significantly higher number of A. flavus infected seeds than control plant seeds.


Sclerotia are produced by a heterogeneous group of Ascomycetous and Basidiomycetous fungi. Currently four types of names are in use for these fungi: 1) names based on sclerotium-producing somatic anamorphs such as Sclerotium cepivorum; 2) names based on sclerotium-producing conidial anamorphs such as Nakataea sigmoidea and Botrytis cinerea; 3) names based on sclerotium-associated teleomorphs such as Typhula gyrota; 4) "cross-reference names" such as the Rhizoctonia solani state of Thanatephorus cucumeris." Each type of name conveys a distinct subset of characteristics; where anamorphs and teleomorphs have been linked in culture the largest pool of information is available for consideration by those classifying and naming fungi and by those using these names in transmitting information. If names for somatic anamorphs are to enjoy continued use, comparative study of sclerotial characteristics is called for to develop a more precise system of classification. Recent changes in nomenclatural rules will affect the application and citation of names.


Root zone samples were collected from sand dunes between northern New Jersey and the southern tip of Assateague Island, VA. Twenty species of VA fungi were found associated with Ammophila breviligulate and Solidago sempervirens. Gigaspora was the dominant genus in the dunes, with G. gigantea the major species. Species of Acaulospora and Glomus also were present. Certain species of VA fungi occurred only in the southern sector of the study area, and others were more frequent in the north. Most species occurred throughout the range of the study. Species richness increased from north to south, but total spore density was relatively constant.

F. M. Latterell and A. E. Rossi. USDA Plant Disease Research Laboratory, Frederick, MD 21701. Longevity of Pyricularia oryzae in storage.

Studies conducted since 1954 on physiologic specialization among isolates of Pyricularia oryzae have indicated a surprising retention of viability and virulence through long periods of storage in several forms. In 1981 tests of 50+ dried leaf specimens of lesions on young leaves from greenhouse inoculations dating back to 1963, 40% yielded fresh conidiophores and
conidia upon 24-h incubation in a moist chamber. Each of 20 cultures showed the same pathogenic pattern of specialization on international differential rice varieties as the original isolate had shown as long as 18 years before. Similarly, 15 dry spore products stored since 1963 showed at least 10% viability, and all retained their original pathogenicity. Among these was a product of an unusually phytotoxic strain (640) of Race IG-1 isolated from Nicaraguan specimens in 1954. Even after 27 years in vitro, the potency of this culture toward susceptible varieties was remarkable. Methods are described.

K. J. Leonard, USDA-ARS, Department of Plant Pathology, North Carolina State University, Raleigh, NC 27650. The Helminthosporium complex.

Segregants from the imperfect genus Helminthosporium comprise a large and diverse group of species of plant pathogenic fungi with teleomorphs in several genera. Within the teleomorph genera morphological characteristics of the ascigerous states are very similar, but the species can be distinguished by the biological and morphological characteristics of their conidial states. Thus, although teleomorphs and anamorphs are described separately, identification of the perfect fungus usually requires knowledge of its conidial characteristics. Likewise, the large number of species for which teleomorphs are unknown can be classified into recognizable groups with similar species for which teleomorphs are known. These teleomorph-anamorph associations are: Pyrenophora-Drechslera, Cochliobolus-Bipolaris, Setosphaeria-Exserohilum, and Magnaporthe-Nakatea. Acknowledgement of these associations leads to a relevant and useful taxonomy of species so far known only in their conidial states.


The cup-shaped γ particles of Blastocladiella emersonii can be morphologically distinguished from polyphosphate (poly-P) granules. Elemental analysis of γ particles and poly-P granules in B. emersonii zoospores revealed further differences. Poly-P granules contain P and Ca, while γ particles contain no measurable amounts of either P or Ca. The γ particles of Allomyces macrognus and Blastocladia ramosa are morphologically similar to poly-P granules. Elemental analysis reveals 2 types of small, electron opaque bodies in zoospores of both. One type contains P and Ca and are presumed to be poly-P granules. The other type contains neither P nor Ca and are presumed to be γ particles. This type of analysis may be useful in distinguishing poly-P granules from γ-like particles in zoospores of other aquatic fungi.

Liberta, A. E., see Anderson, R. C.

Lilly, W., see Charvat, I.

Lingle, W. L., see Barstow, W. E.

Loesch, E., see Charvat, I.

E. S. LUTTRELL. Department of Plant Pathology, University of Georgia, Athens, GA 30602. Morphology in Daldinia and Hypoxylon Sect. Hypoxylon.

Daldinia concentrica has long, lax conidiophores and produces quantities of alcohol-soluble pigments. The narrow, uniformly cylindrical, persistent paraphyses arise from the lateral walls of the perithecium. A compact mass of primary ascogenous hyphae fills a basal pouch in the perithecial wall. Long, persistent, nonseptate, stair-step secondary ascogenous hyphae range diagonally upward across the paraphyses. The steps derive from widely spaced croziers that proliferate from the fused tip and stalk cells. An ascus stands on each step. Neither the ascogenous hyphae nor the ascii form a wall layer. Except for production of primary ascogenous hyphae in a basal mound, development is similar in Hypoxylon sclerophaeum and H. howelatum. These and other species in the section Hypoxylon seem more closely related to Daldinia than to the remaining sections of Hypoxylon.

MacDonald, W. L., see Newhouse, J. R.

D. P. Mahoney and D. Malloch. Biology Department, California State University at Los Angeles, Los Angeles, CA 90032 and Department of Botany, University of Toronto, Toronto, Ont. M5S 1A1. New Species of the Sporormiaceae

Two new species of the Sporormiaceae are described. Both are characterized by 4-spored ascospores strongly flattened on the side adjacent to the ascus wall and constricted at the septa on the opposite side. The smaller-spored soil species produces a Phoma-like anamorph in culture. The dung species.
Many of the specimens were fixed and then sectioned with a freezing microtome. Our studies of the intimate details of the growth of this fungus reveal that: (1) the sori are produced from an expanding thallus that can be divided into several functional zones; (2) sori begin as organized substomatal "protosori" composed of a layer of cells distinct from the hyphae that bore them; (3) sometimes these protosori "miss" the stomata; and (4) young emergent, suprastomatal sori may have a mucilaginous "covering." Thallus and sorus organization in 

**Hemileia vastatrix** differs from what is known for some other rust fungi.

J.W. McCain and J.F. Hennen, Purdue University, West Lafayette, IN 47907. The 100th Anniversary of the J.C. Arthur Herbarium of Rust Fungi (1883-1983).

In January, 1883, Prof. J.C. Arthur published his first paper on the taxonomy of rust fungi (Uredinales). We take this as the starting date of the Arthur Herbarium, the world's largest actively-studied collection of these important plant disease fungi, now located at Purdue University. Arthur joked that he was the first graduate of Iowa State University - he was in the first class, and his name came first in the alphabet.

Arthur went on to publish over 200 scientific articles, including 150 on the rust fungi, and founded the herbarium which now contains over 100,000 specimens from around the world. On the occasion of this centennial year, we have reviewed the history of the Arthur Herbarium as well as the status of the current research projects based on these collections. The Arthur Herbarium serves mycologists and plant pathologists as a center for identifications and distribution records of rust fungi.

A.-C. McGraw and J. W. Hendrix. Dept. of Plant Pathology, University of Kentucky, Lexington, KY 40546. Use of the 'Most Probable Number' (MPN) technique for evaluating effects of soil fumigation and cropping on activity of endogonaceous fungi.

Propagules of mycorrhizal fungi per g of soil (ppg) were estimated by the MPN technique. Soil samples were diluted with sand in sequential 2-fold dilutions to 1:400 in plastic tubes containing 200 g of medium. Ppg values were calculated iteratively and treatment differences analyzed statistically. Incubation time (5, 11 wk) and the use of 2 sand:1 soil (v/v) as a diluting medium did not influence ppg values. In field experiments, fumigation with methyl bromide(67%)-chloropicrin(33%) eliminated mycorrhizal fungus activity immediately and for 5-8 mo afterwards, although spores still were present (>0.5/g of soil). Growing a sorghum x sudangrass hybrid resulted in ppg values
twice those for bell pepper or fallow. As an assay host, the hybrid gave ppg values 3-fold those with red clover for the hybrid, but not for pepper or fallow. Ppg values were at least 2-3-fold higher than values predicted from spore counts. Non-viable spores persisted in soil; thus, spore counts may be unreliable as a measure of mycorrhizal fungus activity.

McGraw, A.-C., see Hendrix, J. W.


An isolate of Comatricha sp. was used in this study. Data will be presented on the ploidal cycle, the mating type analysis of the parental generation and the analysis of the mating type segregation of the \( F_1 \) generation derived from three different parental crosses. The possibility of meiotic drive in this species will be discussed.

McGuinness, M. D., see Haskins, E. F.

McLaughlin, D. J., see Bourett, T. M.

McMahon, J. A., see Allen, M. F.

Factors Influencing the Growth of Peronospora parasitica (Downy Mildew) in Crucifers.

Information will be presented on the extent and type of growth of Peronospora parasitica in commercial and related Crucifers treated with combinations of 3-indole acetic acid, 2-indolyl-aceto nitrile, sucrose and chloramphenicol. A procedure using Crucifer seedlings, similar to that used to assay for plant hormones in pea seedlings, is utilized.

ANDREW S. METHVEN. San Francisco State University, San Francisco, CA 94132. A taxonomic survey of the genus Lactarius in northern California.

Although a monograph of the genus Lactarius has recently been published, the species of Lactarius in California continue to present numerous taxonomic problems. The genus Lactarius is one of the most abundant, conspicuous, and recognizable genera in the California mushroom flora. Morphological variation often obscures clear species delimitations and has resulted in the application of more species epithets than taxa actually collected in the forests of California. This study has reduced the number of species epithets applied to the genus Lactarius in California and established less variable morphological characters for more precise field identification. In addition, several new species of Lactarius will be presented as well as numerous first records of Lactarius species in California.

R. J. MEYER. Dept. of Botany, Univ. of Georgia, Athens, Georgia 30602. The movement of Allomyces zoospores in an artificial soil environment.

Laboratory experiments were conducted to determine what role zoospores might play in dispersal of Allomyces in a soil environment. Several sterilized hemp seeds were placed at various locations within dishes that contained 10 g of vermiculite and a variable amount of water. Then, a hemp seed that had previously been inoculated with \( A. \) macrogynus was added to each dish. In flooded vermiculite (150 ml of water), sterilized seeds 3 cm from the inoculum source had young thalli of \( A. \) macrogynus within 3 days, whereas in very damp vermiculite (100 ml of water) the appearance of young thalli took 6 days. With relatively dry vermiculite (less than 75 ml of water), none of the uninoculated seeds showed any growth. No hyphal connections were ever seen between seeds. Thus, the new growth on sterilized seeds must have been the result of movement of zoospores produced by the inoculum to the sterilized seeds. The results suggest that zoospores could act as effective dispersal structures in damp or very wet soils in nature.

S. L. F. MEYER. Dept. of Plant Pathology, University of Georgia, Athens, GA 30602. Ascocarp development of Pseudopeziza medicaginis.

Ascocarp development begins with the formation of ascogonial coils on intracellular hyphae in mesophyll cells of living alfalfa leaves. These host cells become filled with hyphal masses. Branched paraphyses arise from uni- or multinucleate cells in the hyphal masses near the base of the palisade mesophyll and grow toward the upper epidermis, while croziers proliferate from binucleate ascogenous cells. Host cell walls disappear in the region occupied by the enlarging ascocarp, and the upper epidermis bulges above it. A layer of tissue derived at least in part from hyphae in the epidermal cells covers the hymenium. At maturity this layer and the overlying
epidermis are ruptured by the expanding disc of asci and paraphyses. The thin exciple is differentiated into an outer and an inner layer.

Miller, C. E., see Dylewski, D. P.
Miller, C. E., see Martin, R. W.
Miller, C. E., see Wagner, C. A.
Miller, O. K., see Bills, G. F.
Miller, O. K., Jr., see Miller, S. L.

R. MICHAEL MILLER. Argonne National Laboratory, Argonne, IL 60439. Survival dynamics of v-a mycorrhiza propagules in stockpiled topsoils.

The survival dynamics of v-a mycorrhiza (VAM) propagules from stockpiled soils located in the Red Desert of Wyoming were determined. Samples were collected at 0.5 depth intervals to 2-m from soils stockpiled for up to 6 years. Using a corn bioassay system, the infection potential for these soils were determined. At the same time the insitu moisture content was determined for each of the samples and expressed as tension (MPa). Using a logistic model, a senescence rate for propagules of 13% a year is predicted. It was also found that the moisture content at time of storage significantly affects survival of VAM propagules with the nonlinear model ln (infection percent) = 3.94*(1-e^-0.2x) resulting in a R^2 = 0.55, where x = tension. This suggests that soils stored at moisture tensions lower than -2.0 MPa are detrimental to VAM propagule survival. Also, soils at tensions greater than -2.0 MPa show little loss in VAM viability.


Zelleromyces Singer and Smith originally included six species of fungi placed in the "Astrogastraceous series". Zelleromyces has now been placed in the Elasmomycetaceae. The taxa have amyloid spore ornamentation, abundant latex and a columella. Little information exists concerning the ecological role of the species. Sporocarps of Z. ravenelii (B. & C.) Singer and Smith were collected from the Piedmont of the southeastern United States under shortleaf pine. Pure tissue isolates were made using a peat-vermiculite-nutrient solution medium and used to achieve synthesis in the laboratory. Distinctive "tuning-fork" ectomycorrhizal rootlets were produced. Successful synthesis of mycorrhizae with Zelleromyces ravenelii x Pinus echinata Mill. indicated for the first time that Z. ravenelii is an ectomycorrhizal species. The systematics, host specificity, and world distribution of Zelleromyces is discussed.


TEM and SEM were used to examine the events involved in basidium and basidiospore development in an isolate of P. schweinitzii that fruits readily in culture. Basidiocarps produced in culture consist of numerous, small, upright aggregations of hyphae. Cystidia, basidia and basidiospores produced in culture appear to be similar to those produced in the wild on larger, typical basidiocarps of this fungus. A succession of basidia arises from a single hypha. Each basidium initially resembles a short hyphal branch. The nuclei in the hyphal cell divide conjugately and two daughter nuclei move into the basidium. No clamp connections are present. The basidium enlarges and a doliospore septum develops at its base. Karyogamy and meiosis occur within the basidium and four basidiospore initials develop. A single nucleus enters each developing spore along with a complement of cellular organelles.


Mature aeciospores of Cronartium quercuum f. sp. fusiforme are incompletely verrucose. While most of the spore surface is covered with annulated, wart-like verrucae, each spore also possesses a smooth region that runs the length of the spore and extends around each end. This study suggests that the verrucae and the smooth portion of the spore ornamentation are composed of the same type of material. Verrucae initially appear as small, electron-transparent structures near the outer surface of the plasma membrane just beneath the primary aeciospore wall. Many vesicles are associated with developing verruca, but not with the developing smooth portion of the ornamentation. The verrucae and smooth portion of the ornamentation are exposed on the spore surface following the disinte-
gration of the primary aeciospore wall. A secondary wall eventually forms between the ornamentation and the spore plasma membrane.

Modjo, H. S., see Hendrix, J. W.


Continuing collections and observations indicate the following fungus-tree association to be mycorrhizal. *Amanita muscaria* (L. ex Fr.) Schum; *Picea likiangensis*, *P. spinulosa*, N. W. Yunnan and E. Tibet at numerous localities between 2900 - 4000 m. alt. *Boletus edulis* Bull. ex Fr.; *Pinus yunnanensis*, N. armandi, *P. densata*, Yunnan, W. Sichuan and the valley of eastern Yalu-Tsangpo River, 1900-3000 m. alt. *Boletus citrifragans* Chiu et Zang; *Castanopsis hystrix*, Abies georgei, Yunnan, 3,500-4,000 m. alt. *Dictyophora rubrovalvata* Zang, Jee et Liao; *Sinoceleopus affinis*, Phyllostachys sulphurea, Yunnan, 1,900-3,200 m. *Tricholoma mataires* (Ito et Imai) Sing.; *Pinus yunnanensis*, *L. densata*, *L. chengii*, *P. yunnanensis*, *P. engelmannii*, *P. pannosa*, N. Yunnan, W. Sichuan and the valley eastern Yalu-Tsangpo River, between 1,500-3,200 m. alt. *Suillus granulatus* Kuntze; *Pinus*, 1,500-3,000 m. Yunnan et al.

Myers, D., see Stempn, H.

K. K. NAKASONE and H. H. BURDSALL, JR. Forest Products Laboratory, Center for Forest Mycology Research, P.O. Box 5130, Madison, WI 53705. Merulius--just an alias for Phlebia?

Morphological studies of specimens fitting the current concepts of Merulius tremellosus Fr. and Phlebia radiata Fr., the type species of their respective genera, reveal striking similarities. Isolates of the two species also share many characteristics in pure culture. The evidence, we find, points to a stronger relationship than currently accepted. It indicates that the two species are congeneric. After further study, it may be necessary to place Merulius in synonymy with Phlebia.

Nativig, D. O., see Taylor, J. W.


Hyphae of virulent and hypovirulent isolates of Endothia parasitica were freeze-substituted and examined by transmission electron microscopy. Hyphal tip cells of a hypovirulent isolate of Italian origin contained spherical membrane bounded virus-like particles (VLP's), 90-90 nm in diameter, that closely resembled those reported in a morphologically different hypovirulent isolate. The VLP's were grouped together in aggregates located no closer to the hyphal tip than 20 μm. The results of Bernhard's EDTA staining technique suggested that the core of each particle consisted of RNA. Some VLP's were observed associated with smooth cisternae, indicating a possible replication site. These Golgi-like structures were situated near the center of a group of particles, and were closely associated with rough endoplasmic reticulum. Virus-like particles were not found in two virulent isolates.
The fungus Exobasidium Woron. causes leaf galls and shoot infections on the ericaceous bog plant Chamaedaphne calyculata (L.) Moench. Specimens collected on this host in Atlantic Canada exhibited a range of spore sizes, but in culture the isolates were morphologically and physiologically similar. Pathogenicity tests showed that isolates from leaf galls were capable of causing shoot infections, and vice versa. There was no evidence for the existence of more than one species of Exobasidium on C. calyculata in Canada, and it seems unlikely that E. savillei Nannf., recently described from European material, deserves specific status.

A reexamination of three polypore genera using electrophoretic data.

Grifola frondosa, Meripilus giganteus and Laetiporus sulphureus are three reasonably distinct morphological species. Despite the fact that they are presently relegated to different genera, they have many features in common, and were at one time all considered as species in the genus Grifola. Except for the presence of clamp connections in G. frondosa, the first two species are remarkably similar. Two recent, fortuitous collections of M. giganteus (a rare species in Iowa) permitted a reassessment of the traditional morphological evidence. Since frozen material of the other two species was already available, an electrophoretic study was also possible. Eight enzymes were assayed on horizontal starch gel slabs, and the resulting genetic variation among these species compared. Correlation between morphological and electrophoretic evidence will be discussed with respect to the generic classification of these taxa.


The osmium tetroxide-potassium antimonate technique was used to detect cations in zoospores of Chytrium hyalinum. Electron-opaque precipitates were located in the fenestrated and closed cisternal portions of rumposomes in zoospores. Precipitates also appeared in the fenestrae of rumposomes, in mitochondria, in lipid globules, and on the plasma membrane. EGTA, which selectively chelates calcium ions, removed most of the precipitates from sections of rumposomes, mitochondria and lipid globules, indicating the electron-opaque material was antimonate precipitates of calcium ions concentrated in these organelles. The localization of calcium in the rumposome and the close association of the rumposome with the flagellar apparatus suggest a role for the rumposome in the regulation of flagellar activities.

Fungi associated with the beetle Aegialia hardyi.

The beetle Aegialia hardyi (Coleoptera; Scarabaeidae) is endemic to sand dunes where they can be collected under the canopy of various shrubs. They feed on detritus consisting of a mixture of plant parts. Observation of the gut content revealed large amounts of fungal material as well as plant tissues. This preliminary study illustrates types of mycelium, sporophores and spores present.

Z. K. PUNJA and S. F. JENKINS, Dept. of Plant Pathology, North Carolina State University, Raleigh 27650. Influence of medium composition and the isolate on oxalic acid production by Athelia (Sclerotium) rolfsii.

Three heterokaryotic and two homokaryotic strains of Sclerotium rolfsii were grown in a liquid salts medium (LSM, pH 5.8) containing 110mM glucose that was unamended or amended with additional salts. Mycelial dry weight (DW) and oxalic acid (OA) production were determined after 7 da at 27-30C. Addition of 5mM Na-citrate or Na-succinate, 0.5% Bacto-peptone or yeast extract, or 2% carboxymethylcellulose (CMC) to LSM increased both DW and OA. Addition of 2mM NH4HCO3 or NaHCO3, 5mM (NH4)2SO4, L-cystine, KH2PO4, K2HPO4, or Na-acetate reduced DW but increased OA, while 5mM L-malate, CaCl2, Ca(NO3)2, or oxalic acid did not affect DW but reduced OA. Dry weight and OA were comparable when either (NH4)2SO4 or KNO3 was used as the nitrogen source instead
of 12.5 mM NH₄NO₃, or when either 2% CMC or pectin was used as the carbon source instead of 110mM glucose. Dry weight and OA production in LSM varied with the isolate, and ranged from 80 to 310 mg and 16 to 30 mg, respectively.


The taxonomic position of Sclerotium hydrophilum is discussed with particular reference to sclerotium morphology and anatomy, and septal ultrastructure. Based on morphology and anatomy, but not sclerotial size, S. hydrophilum can be readily distinguished from other Sclerotium spp. attacking aquatic macrophytes and, based on the ultrastructural nature of its septum, S. hydrophilum is clearly shown to be a Basidiomycete even though its doliopore septum does exhibit some unique characteristics. The basidiomycete nature of this organism may explain some features of its role in stem rot of white and wild rice hosts.


Agarics from shrub-steppe and Salix communities at six sites along the Columbia River in Grant Co., Wa. were surveyed revealing a taxonomically and biologically diverse assemblage of taxa. Approximately 75 taxa encompassing 11 families and 34 genera were observed over a two year period. Biologically, the fungi can be characterized as saprobic (terrestrial or lignicolous) or mycorrhizal. The distribution of taxa was observed to vary temporally and geographically. Distinct phenological patterns were observed and categorized as vernal, autumnal or bimodal. Within season fruiting pattern variation also was observed and correlated with seasonal variation in temperature and rainfall. The distribution of taxa varied substantially within sites and between sites. The determinants of this variation may be attributed to edaphic conditions, site exposure, composition of the surrounding higher plant vegetation and substrate availability and position.

Reid, J., see Dowsett, J. A.

Reid, J., see Hopkin, A.

A. ROY, A. PAL and A. DAS. Department of Botany, Visva Bharati University, Santiniketan, Bengal, India and Department of Microbiology, Bose Institute, Calcutta-9, India. Monokaryotization of Polypores by Alcohol.

Dikaryotic mycelia of Polyporus ostreiformis and Trametes cubensis were grown in shaking condition in 2 % malt extract containing 0.5-2.0 % alcohol. After 5-7 days of shaking 20-40 % of the macerate derivatives were found to be neohaplonts. Those of each sp. were crossed in one set with monokaryotic test isolates, and in another set amongst themselves. Genetic analysis revealed that matings in all cases were normal, showing typical bipolar sexuality. It is concluded that alcohol in specific concentration can be used as a monokaryotizing agent for higher fungi.

D. M. RYKARD. Department of Plant Pathology, University of Georgia, Athens, GA 30602. Conidiogenesis and Variability in Conidiomata of the Ephelis State of the Balansiae.

Conidiogenesis proved to be holoblastic in the Ephelis conidial states of the six species studied. Conidiomata varied among the six species, and the species may be ordered in a series based on increasing complexity of conidiomata. Balansia strangulans produces over the surface of the stroma, beneath an evanescent peridial layer, a continuous palisade of conidiophores. In B. epichloé, B. henningsiana, and Myriogenospora atraentosa sterile ridges separate the conidiophore palisade into flat, hysteroform cavities in the surface of the stroma. In a previously unreported Ephelis state of Balansiosis pilulaeformis, conidiophores are restricted to small discoid cavities in the stroma. Atkinsonella hypoxylon produces apothecoid conidiomata in specialized protuberances from the stroma, as does B. claviceps (anamorph=E. mexicana, type of the genus Ephelis). Ephelis belongs in the Excipulaceae (Discellaceae), where it was originally placed, or in Sutton's Blastostromatineae.
Sanders, T. H., see Hill, R. A.

J. D. Schoknecht, Indiana State University, Terre Haute, IN 47809 and J. L. Crane, Illinois Natural History Survey, Champaign, IL 61820. Tretic Conidium Development in Helminthosporium velutinum.

The ultrastructure of conidium development in a PDA culture of H. velutinum was examined with TEM. Our studies show a clear delimitation of wall layers. A solitary conidium originates through a pore and apparently only the inner wall of the conidigenous cell participates in conidial development. Thus, conidiogenesis in H. velutinum is tretic as defined by M. B. Ellis. This is in marked contrast to the report of holoblastic development in H. solani.

J. Seshadri, I. H. Denaar, J. E. Hamer and D. A. Cotter, Univ. of Windsor, Windsor, Ont. N9B 3P4, Canada. Effects of Ultraviolet light on Polysphondylium pallidum Microcyst Germination. Microcysts of Polysphondylium pallidum spontaneously germinate upon suspension in phosphate buffer. Application of ultraviolet irradiation up until a "critical point" in germination (about 30 minutes prior to emergence) inhibits the excystment process, the incorporation of labelled uracil into TCA insoluble precipitates and the increase in the specific activity of the marker enzyme trehalase. It thus appears that microcysts of

Six species of VA mycorrhizal fungi each at 500 spores/kg of pasteurized soil were evaluated on soybean (Glycine max) in a repeated greenhouse experiment. Spore germination was recorded at 15 days, root penetration points at 30 days, and root colonization percentages at 30 and 60 days after seeding. The 6 species formed 2 groups. Group I (Glomus mosseae, G1 intraradices, Gigaspora heterogama) had the higher germination, penetration, colonization and fungal growth rates than group II (G1. etunicatum, G1. margarita, Entrophospora sp.). When Smith and Walker's equation (1981. New Phytol. 88:225-240) for modeling fungal growth in roots was applied to our data or we calculated the fungal growth rate (cm/day) per penetration point, the highest fungal growth rates were assigned to group II. Fungal growth rate per penetration point was inversely proportional to penetration points, indicating interference among hyphae from different penetration points in the root.

J. D. Schonbeck and Marjan van Nuffelen. Plant Pathology Department, University of Florida, Gainesville, FL 32611. Spore germination, root penetration and colonization by six species of vesicular-arbuscular (VA) mycorrhizal fungi on soybean.

SAMUELSON, D. A., ANDRESEN, T. L. and GWIN, R. M., University of Florida, Gainesville, Fla. 32610. Fungal Flora of Conjunctival Sacs in Domestic Animals

This investigation compared the fungal flora of conjunctival sacs of normal equine, bovine, canine, and feline eyes in order to better equip the clinician to interpret fungal cultures of infected eyes. Samples were obtained from both eyes and transferred onto a variety of media. Fungi were isolated from 95% of the conjunctival sacs in horses, 100% in cows, 82% in dogs and 40% in cats. Species of Aspergillus were isolated from 56% of the horses, 12% of the cows, 8% of the cats, and none from dogs. This finding correlates closely to the relatively high incidence of Keratomycosis caused by Aspergillus in horses. Species of Penicillium and Cladosporium were ubiquitously isolated. Collectively, 24 species from 218 isolates were identified. Twenty percent of the isolates were not identified (9% yeast, 11% hyphal isolates).

Rust, R. W., see Prusso, D. C.


Nephromyces Giard is a group of peculiar cells found consistently and exclusively in the ductless "renal sac" of molgulid tunicates ("sea squirts": marine invertebrate chordates). Despite their diverse appearance, the seven (or so) Nephromyces cell types are separate life-history stages of a single organism. Though Nephromyces has traditionally been considered a chytridiomycete, its life cycle, light-microscope morphology, and initial data on its ultrastructure all suggest that it may not be a chytridiomycete. Nephromyces does not seem to be a pathogen or parasite; though Nephromyces' universal infection of molgulids suggests a mutualism, experimental support for this hypothesis is thus far ambiguous. Whatever its phylogenetic relationship to the Eumycota, Nephromyces does resemble fungi in its apparently absorptive mode of nutrition. Morphological evidence suggests that Nephromyces breaks down the tunic in its apparently absorptive mode of nutrition. Morphological evidence suggests that Nephromyces breaks down the extensive uric acid deposits contained in its host's renal sac.
Freshwater Ascomycetes. A characteristic of freshwater Ascomycetes based on a review of published reports and collections of Ascomycetes from freshwater habitats is presented. The freshwater Ascomycetes are a diverse taxonomic group with members in the Dothideales, Eurotiales, Helotiales, Pezizales, Phacidiiales, Pleosporales, and Sphaeriales. They can be grouped according to decreasing eu- versus disto- or mno-

Shotwell, O. L., see Hesseltine, C. W.

P. pallidum exhibit a "competence point" which is believed to be a time when all the biosynthetic events necessary for emergence have been completed. Application of UV beyond this point is no longer inhibitory to the emergence process. A comparable inhibition of amoebae emergence and uracil incorporation has been observed in the presence of the UV mimic, 4-nitroquinoline 1-oxide. These data suggest that the successful completion of microcyst germination in P. pallidum is dependent upon UV sensitive functions involving transcription and translation.

C. A. SHEARER. University of Illinois, Urbana, IL 61801. Freshwater Ascomycetes.

In 1974, Couch, Romney and Rao described Culicinomyces clavosporus, a new Hyphomycete causing high mortality in Anopheles quadrimaculatus reared in the laboratory in water collected from a lake in North Carolina. Approximately 1 year earlier, Sweeney and his associates in Australia observed a fungal pathogen of laboratory reared Anopheles amictus hilli but did not name it. Recently Sweeney, Couch and Panter confirmed the Australian isolate as Culicinomyces clavosporus. In the summer of 1982, we obtained a third isolate of C. clavosporus from a dead larva of Culiseta inornata recovered from a pond in Devon, Alberta. In this report we compare the microscopic and colonial morphology of the three isolates and compare Culicinomyces with some other genera of Hyphomycetes including Tolypocladium, Meria, Beauveria and Verticillium.

C. A. SHEARER. University of Illinois, Urbana, IL 61801. Freshwater Ascomycetes.

F. W. SPIEGEL. Department of Botany and Microbiology, University of Arkansas, Fayetteville, AR 72701. Is Eumycetozoa a monophyletic group?

The class Eumycetozoa contains the protostelids, myxomycetes, and dictyostelid cellular slime molds. As originally proposed the class is supposed to represent a monophyletic group that evolved from a protostelid-like, amoeba-flagellate ancestor. However, the definitive characters of Eumycetozoa - filose pseudopodia, tubular mitochondrial cristae, and fruiting - are all shared with other groups of organisms and cannot be used to define the class as monophyletic. Developmental and ultrastructural characters that may be useful for deciding the phylogenetic status of Eumycetozoa will be discussed, and a phylogeny of the flagellate protostelids and myxomycetes will be presented.

LYNNE SIGLER and MARK S. COETTEL. Mold Herbarium and Culture Collection and Department of Entomology, University of Alberta, Edmonton, Alberta, Canada T6G 2H7. Taxonomy of the entomopathogenic Hyphomycete Culicinomyces clavosporus.

In 1974, Couch, Romney and Rao described Culicinomyces clavosporus, a new Hyphomycete causing high mortality in Anopheles quadrimaculatus reared in the laboratory in water collected from a lake in North Carolina. Approximately 1 year earlier, Sweeney and his associates in Australia observed a fungal pathogen of laboratory reared Anopheles amictus hilli but did not name it. Recently Sweeney, Couch and Panter confirmed the Australian isolate as Culicinomyces clavosporus. In the summer of 1982, we obtained a third isolate of C. clavosporus from a dead larva of Culiseta inornata recovered from a pond in Devon, Alberta. In this report we compare the microscopic and colonial morphology of the three isolates and compare Culicinomyces with some other genera of Hyphomycetes including Tolypocladium, Meria, Beauveria and Verticillium.

Smith, W. K., see Stahl, P. D.

F. W. SPIEGEL. Department of Botany and Microbiology, University of Arkansas, Fayetteville, AR 72701. Is Eumycetozoa a monophyletic group?

The class Eumycetozoa contains the protostelids, myxomycetes, and dictyostelid cellular slime molds. As originally proposed the class is supposed to represent a monophyletic group that evolved from a protostelid-like, amoeba-flagellate ancestor. However, the definitive characters of Eumycetozoa - filose pseudopodia, tubular mitochondrial cristae, and fruiting - are all shared with other groups of organisms and cannot be used to define the class as monophyletic. Developmental and ultrastructural characters that may be useful for deciding the phylogenetic status of Eumycetozoa will be discussed, and a phylogeny of the flagellate protostelids and myxomycetes will be presented.

LINDA J. SPIELMAN. University of Toronto, Toronto, Ont.M5S 1A1 Taxonomic criteria in the genera Valsa and Leucostoma.

The delimitation of taxa in the genera Valsa and Leucostoma depends on a combination of criteria. Ascospore size, number and arrangement of perithecia and ostioles, structure of anamorphic locules, and stromatal anatomy are the most important
characters, but no single character is constant enough to be exclusively relied upon. Similarly, the presence of a black basal zone in not always reliable as the sole diagnostic criterion for the genus Leucostoma. Black basal zones are occasionally found in Valsa species, and they are sometimes absent or partially formed in Leucostoma species. Nevertheless, Leucostoma is accepted as a good genus, delimited by a combination of characters: disc color, stroma anatomy, arrangement of perithecia, and the black basal zone. Some Leucostoma species, such as L. persoonii, are characterized by unique protein patterns, while others, such as L. nivea, have protein patterns which are very similar to those of Valsa species.


The influence of vesicular-arbuscular mycorrhizae on the water relations of the rangeland grass Agropyron smithii was compared for two different geographic isolates of both Glomus macrocarpus var. macrocarpus and Glomus microcarpus. Leaf resistance to water vapor loss ($R_{WV}$) were up to 47% lower in mycorrhizal plants vs. non-mycorrhizal plants in dry soil conditions (near -6 MPa). Plants infected with G. microcarpus had $R_{WV}$ values that were up to 26% lower than G. macrocarpus-infected plants at lowest soil water potentials. However, changes in xylem pressure potentials over a soil water potential range from 0 to -6 MPa were not statistically different between non-mycorrhizal plants or plants infected with either of the two fungal congeners. Also, plants infected with G. microcarpus from a dry Wyoming site had statistically different responses to drying soil than did plants infected with G. microcarpus from a more mesic site with an approximate 9% difference in $R_{WV}$ at a soil water potential near -5.5 MPa.


Ultrastructural aspects of the conversion of constitutively dormant oospores to thin-walled germinable oospores in non-sterile soil extract were studied by electron microscopy. During conversion, the thick inner oospore wall dissolves leaving the outer oospore wall as a loose but intact layer surrounding the spore. A thin germination wall, which eventually extends as the germ tube wall, is produced around the protoplast. The reserve cytoplasm of the oospore, consisting of a dense, central ooplast and a cortical layer of lipid bodies, changes to a more functional cytoplasm including nuclei, mitochondria, endoplasmic reticulum, and dictyosomes. The ooplast fragments and becomes enveloped in membranes to form the "finger-print" vacuoles characteristic of the oomycetous fungi while the cortical lipids disperse within the cytoplasm. During germination, the germ tube ruptures the outer oospore and oogonial walls.

H. Stemp, R. C. Evans, K. Santore and D. Myers. Biology Department, Rutgers University, Camden, NJ 08102. Studies on structures and antigenic components of the hyphal sheath in Bipolaris maydis race T.

Using indirect immunofluorescence techniques it has been previously demonstrated that the hyphal sheath and underlying cell wall in Bipolaris maydis fluoresce and thus contain antigenic material. However, when hyphae are pretreated with papain the sheath loses its ability to fluoresce, but the fluorescence of the underlying wall is relatively unchanged. Treatment with trypsin gives similar but less distinct results. The antigenic component of the sheath is thus proteinaceous. Papain treatment has no noticeable effect on the appearance of the sheath as visualized by negative staining with India ink. However, treatment with B-glucuronidase strips the sheath completely from the hypha indicating that the sheath is also partially carbohydrate in nature. These data suggest that the sheath is composed of a carbohydrate matrix in which protein is embedded.

Stolz, L. P., see Kiernan, J. M.

Stumhofer, P. S., see Jaworski, A. J.

J. B. SUTHRELAND. Department of Biological Sciences, Texas Tech University, Lubbock, TX 79409. Utilization of Pycnoporus cinnabarinus for the biodegradation of cotton-gin-trash lignocellulose.

Cotton-gin trash (separated into green bolls, burr trash, and gin motes) was oven-dried and ground to 40 mesh. Trash samples then were extracted with hot water, benzene, and ethanol to produce extractive-free lignocelluloses. 500-mg portions of lignocellulose were placed in 250-ml Erlenmeyer flasks that were plugged with cotton and sterilized by autoclaving. Flasks were inoculated with 2 ml of 1% malt extract containing pregrown mycelia of the white-rot fungus Pycnoporus cinnabarinus. Inoculated and control lignocelluloses were incubated in a
humid incubator at 37°C for periods up to 30 days. Lignocelluloses from green bolls inoculated with *P. cinnabarinus* lost 43% of their original dry weight in 30 days; burr trash lost 24%; and gin motes lost 15%. Acid-insoluble lignin was removed from burr trash and gin motes at about the same rate as carbohydrate; green bolls lost slightly more carbohydrate than lignin.

B. C. Sutton. Commonwealth Mycological Institute, Kew, TW9 3AF, U.K.

Name changes in plant pathogenic coelomycetes.

An outline of modern taxonomic concepts in coelomycetes is given. The discussion includes aspects of conidiomatal structure, conidial morphology and conidiogenesis, recent improvements in terminology, the spatial relationships of pathogens to their hosts, and the 'one host-one pathogen species concept'. As new or different ideas are brought to bear on the systematics of any group this often results in name changes at the generic or species level. An attempt to explain the reasons for such changes is made by using examples of plant pathogenic coelomycetes belonging to genera such as *Colletotrichum*, *Phoma*, *Ascochyta*, *Septoria* etc.

J. W. TAYLOR, G. MAY, and D. O. NATVIG. Dept. of Botany, Univ. of California, Berkeley, CA 94720. Homology among mitochondrial plasmids of *Neurospora* *tetrasperma* and *Neurospora* *intermedia*.

We have found mitochondrial plasmids in four isolates of *Neurospora* *tetrasperma* (FGSC #s 1270, 2509, 2510, 3296). These plasmids are ca. 4.5 kbp long and possess one EcoRI and five HincII sites. All of these plasmids are homologous as judged by Southern hybridization and are also homologous to a previously described mitochondrial plasmid isolated from *N. intermedia* (FGSC # 435; Stohl et al., 1982. Nuc. Acids Res. 10:1439). The *N. tetrasperma* plasmids are not homologous to plasmids isolated from *N. crassa* or other strains of *N. intermedia* (ibid.; Collins et al., 1981. Cell 24:443). These results indicate that identical or closely related mitochondrial plasmids are shared by individuals of different *Neurospora* species, an occurrence that can be explained by the presence of an ancestral plasmid in a common ancestor or by recent interspecific exchange of plasmids.

M.J. Thirumalachar, Jeersannidhi Anderson Institute, Walnut Creek, CA 94596. Influence of growth conditions on the *Cladosporium* or *Phialophora* types of conidial development.

A *Cladosporium* species isolated in screening for growth and ammonia production in nitrogen-free
liquid medium formed surface mycelial mat with chains of conidia as in Cladosporium and numerous discoid colonies adpressed to inner glass surface in submerged condition, the mycelium developing phialospores as in Phialophora. Since starting cultures were from single spores, the development of Cladosporium or Phialophora conidial type was regulated by growth conditions. The genus Cladophialophora Borelli was described for fungi with the two conidial states mentioned above. Since growth conditions appear to regulate their development, designation of a new genus may not be warranted.

Tortolero, O., see Hanlin, R. T.

Tsao, P. H., see Alizaden, A.

The Morphology and Taxonomic Placement of the Nematophagous Fungus, Macrobiotophthora vermicola (Entomophthorales). The characteristics of the cystogenous plasmodium. Further studies of this division at the ultrastructural level, including karyotypic analysis of pachytene nuclei, are underway using parasite-host grown two-member axenic cultures. Continued studies of cyst formation, germination, and primary zoospore ultrastructure may further our understanding of the life cycle of W. pythii in particular, and the Plasmodiophorales as a whole.

Christopher Walker. 21 Barony Street, Edinburgh, Scotland. Glomus fasciculatum: A taxon misunderstood!

A study of many isolates and collections of fungi assigned to the taxon Glomus fasciculatum has shown that many morphologically different forms are included in the current concept of the species. Examination of the type material deposited by Thaxter in the Farlow herbarium revealed features not noted by previous workers that allow a more precise description to be made, and a new basis to be created for the description of similar organisms as new species. Among the species assigned to the taxon are some already described as valid species. These include G. intraradices, G. deserticola, G. intravermum, G. occulunt, and Thaxter's Endogone aranacea. The characteristics that define G. fasciculatum sensu stricta are spore size (60-85 X 60-70 pm), thick, laminated inner wall (6-10 pm thick), thin, persistent, tightly adherent, hyaline outer wall (<1 pm), and light yellow to very pale


Woronina pythii Goldie-Smith (Plasmodiophorales) is an endobiotic, obligate parasite of Pythium spp. (Oomycetes). The life cycles of the plasmodiophoralean parasites are complex and incompletely understood. Recent ultrastructural studies of W. pythii have extended our knowledge of its basic life cycle [Miller and Dylewski, 1983]. In Zoosporic Fungal Pathogens of Lower Plants, Academic Press, London, pp. 249-283; Dylewski and Miller. 1983 a and b. Mycologia 75 (3, 4): (in press); but a number of additional factors need to be clarified. A meiosis I-like division occurs during cleavage of the cystogenous plasmodium. Further studies of this division at the ultrastructural level, including karyotypic analysis of pachytene nuclei, are underway using parasite-host grown two-member axenic cultures. Continued studies of cyst formation, germination, and primary zoospore ultrastructure may further our understanding of the life cycle of W. pythii in particular, and the Plasmodiophorales as a whole.

R. VILGALYS. Virginia Polytechnic Institute and State University, Blacksburg, VA 24061. Cultural characteristics and sexuality of several members of the Tricholomataceae.

Multisporous isolates were derived from collections of Collybia (10 species), Marasmius (5 sp.), and Callistosporium (1 sp.) growing in the southern Appalachians. Several species are reported in culture for the first time. Cultural characteristics are reported for each species and are related to their taxonomy. Tetrapolar sexuality is confirmed in Collybia polyphylla, C. subnuda, C. kauffmanii, and also in Callistosporium luteo-olivaceum. The presence of clamp connections in dikaryotic mycelia of C. luteo-olivaceum is confirmed. Two types of basidiospore production were observed in different collections of Collybia luxurians. Most collections produce normal basidiospores on tetrasterigmate basidia. However, some collections produce only a single spore per basidium. Attempts to germinate single spores produced only dikaryotic hyphae. The possibility of homothallism in C. luxurians is discussed.
yellow-brown color. Isolates used in studies should be carefully examined and the epithet fasciculatum should be used only for specimens that correspond with this description.

Warner, N. J., see Allen, M. F.


Growth and sporulation of Diplodia maydis and D. macrospora changed in response to sucrose concentration in vitro. Quantitative studies were conducted to determine the effect of sucrose at 0, 5, 10, 15, 20, 25, or 30 g/l in still culture under continuous light at 23°C on basal mineral salts media consisting of 5.6gK$_2$HPO$_4$, 3H$_2$O, 2.38gKH$_2$PO$_4$, 0.5gMgSO$_4$, 2.64g(NH$_4$)$_2$SO$_4$, 1 ml Pridham Gottlieb trace salts, and 10 mg biotin/l. H$_2$O. After 4 weeks growth, results showed a negative correlation between sucrose concentration and sporulation (D. maydis, r= -0.980 and D. macrospora, r= -0.499) and a positive correlation between sucrose concentration and mycelial dry weight accumulation (D. maydis, r= 0.977 and D. macrospora, r= 0.983). Maximum spore production was reached at 5 and 10g sucrose/l for D. maydis and D. macrospora, respectively. An inverse relationship between mycelium growth and spore production was established for both fungi.


Evidence is at hand from fossil and extant organisms which permits algae, embryophytes, and animals to be assigned to one of three major groups. These major groups correlate very well with flagellar types and are here named AKONTA, LASIOKONTA, and LEIOKONTA. Akonta lack complex 9 + 2 flagella Lasiokonta produce tinsellated flagella sometimes accompanied by smooth flagella, and the Leiokonta possess only smooth flagella. A survey of fungal flagella permits the fungi to be assigned to the Akonta, Lasiokonta, or Leiokonta. Such an interpretation would emphasize the polyphyletic origin of the fungi.

Wells, W. G., II, see Dunn, P. H.

Whisler, H. C., see Gage, S.


Asexual and sexual reproduction in Monoblepharella and Monoblepharids is dependent on appropriate nutrition, temperature, and illumination. It is now feasible to grow these fungi in defined conditions that has permitted study of their unique asexual and basic life-history.

D. T. Wicklow, B. W. Horn, and W. R. Burg. Northern Regional Research Center, ARS, USDA, Peoria, IL 61604, and University of Cincinnati Medical Center, Cincinnati, Ohio 45267. Sclerotium Dispersal of Aspergillus flavus and Eupenicillium ochrosalmonae from Corn during Harvest.

Sclerotia of A. flavus and E. ochrosalmonae may serve as propagules for overwintering in soil. Their dispersal into soil was examined in a Georgia corn field during harvest. Debris from the combine was sampled directly from the exhaust outlet and from containers placed at ground level to catch airborne debris. Sclerotia were found to be readily dispersed by the combine. Corn that was highly mold-infested contained the greatest number of sclerotia both before harvest and subsequently in the combine debris. Sclerotia could not be readily found in the soil due to their low frequency. The propagule density of A. flavus in soil generally increased following harvest; E. ochrosalmonae, however, was infrequently found. Sclerotia (immature cleistothecia) of E. ochrosalmonae presumably form ascospores in soil, but the importance of A. flavus sclerotia as a source of inoculum relative to other A. flavus propagules in soil is not known.

Wilcox, H. E., see Yang, C. S.

Wilson, D. M., see Hill, R. A.

Wohlgemuth, P., see Dunn, P. H.


A numerical taxonomic analysis of the species of Tylophorus subg. Porphyrellus was conducted using the methods of Sneath & Sokal (1973) and executed by the NT-SYS computer program package by Rohlf, et al. (1974). The analyses were based on those characters which differed among the 12 OTU's examined. UPGMA analy-
sis generated a phenogram, and principal coordinates analysis projected the OTU's into 3-dimensional character hyperspace. The phenetic relationships produced by these analyses will be compared with those taxonomic relationships generated by classical methods of analysis.

C. S. YANG and H. E. WILCOX. Dept. of Enviro. & Forest Biology, State University of New York, College of Environmental Science and Forestry, Syracuse, NY 13210. Cheilymenia sp. as an E-strain ectendomycorrhizal fungus.

Last summer we presented some information concerning a group of E-strain chlamydosporic fungi and their mycorrhizae in an MSA meeting held at Penn State Univ. No teleomorphs of those fungi were found at that time.

Recently, some ascocarps were found fruiting on soil of an open-pot culture of red pine seedlings inoculated with E-strain chlamydospores from an Oregon nursery. These ascocarps belong to the genus Cheilymenia.

Isolation from these ascocarps produced colonies and Chlamydo-spores similar to those of E-strain ectendomycorrhizal fungi. A flask culture was performed to confirm its mycorrhizal forming capability.

D. H. Yocom. Department of Plant Pathology, University of Nebraska, Lincoln, NE. The hidden cost of mycorrhizal infection.

When mycorrhizal and nonmycorrhizal plants which have accumulated equal amounts of phosphorus are compared, a cost of infection can be measured as the difference in dry weight between the larger noninfected plants and the smaller mycorrhizal host plants. Mycorrhizal and noninfected onion plants were grown in a series of phosphorus treatments, under full or reduced greenhouse light, for 90 or 120 days. Higher concentrations of phosphorus in the pots reduced the cost of infection under both high and low light conditions, although the reduction was not as great under reduced light. Generally, the cost was higher when conditions for plant growth were less favorable (i.e. low phosphorus availability and low light). Over time (from 90 to 120 days), the cost of infection was reduced, although the size of the reduction was dependent on the fungal species.

H. ZARE-MAIVAN and R. V. GESSNER. Western Illinois University, Macomb, IL 61455. English oak ectomycorrhizal distribution.

The mycorrhizal and root distribution of four English oaks (Quercus robur L.) growing in a meadow at the Morton Arboretum were studied. Cylindrical soil cores (10 cm X 10 cm) were taken and root volume, mycorrhizal volume, and percent mycorrhizal infection were determined. In random cores, root volumes were 1,518-7,529 mm$^3$ (x=3,980 mm$^3$), mycorrhizal volumes were 104-532 mm$^3$ (x=304 mm$^3$), and percent mycorrhizal infections were 33-64% (x=45%). Seasonal differences were found with the November 1980 samples having a greater root and mycorrhizal volume than the June 1981 samples. A heterogeneous distribution pattern was found for root volume, number of root tips, mycorrhizal volume, and number of mycorrhizal tips. The pattern of the percent mycorrhizal infection, however, was homogeneous. A high correlation was found between mycorrhizal volume and root volume. Mycorrhizal volume and percent mycorrhizal infection had a strong correlation with soil pH, phosphorus, and potassium levels.
PUBLICATIONS WANTED

The Escuela de Agronomía of the Universidad Centro Occidental in Barquisimeto, Venezuela has a new graduate program in mycology and plant pathology and desires to build their library via reprint collection development. Reprints, unneeded duplicates, and other articles in any aspect of mycology-plant pathology would be useful. Send to Richard T. Hanlin noting that they are for this purpose; he will forward them.

W. J. Vail is in need of Johanssen's PLANT MICROTECHNIQUE, 1940, and Bessey's MORPHOLOGY AND TAXONOMY OF FUNGI, 1950.

W. R. Burk would like to obtain reprints on Gasteromycetes.


D. Schmitt wants a copy of the MYCOLOGICAL GLOSSARY by Smell and Dick.


Robert Machol continues to seek rare books on mushrooms not presently in his collection, including incomplete early works.

J. D. Jensen would like to obtain copies of the following books: DIE GATTUNGEN DER AMEROSPOREN PYRENOMYCETEN, J. A. von Arx & Emil Muller, 1954; DIE GATTUNGEN DER DIDYOSPOREN PYRENOMYCETEN, Emil Muller & J. A. von Arx, 1962.

C. W. Hesseltine would like publications dealing with the effect of mycotoxins on yeast fermentation.


Elizabeth O. Farwell is interested in obtaining OUR EDIBLE TOADSTOOLS AND MUSHROOMS AND HOW TO DISTINGUISH THEM by Hamilton Gibson.

Richard Summerbell is still collecting any original mycological humour (or overlooked classics), including cartoons and satirical works.

S. L. Stephenson needs reprints on Myxomycetes.

Rod Tulloss wishes to obtain a copy of Singer's book AGARICALES IN MODERN TAXONOMY, 1975. (see Publications for give away, etc. for address)

Fred Spiegel would like a copy of AQUATIC PHYCOMYCETES, Sparrow, 1960.

C. Volbracht requests any old mushroom books to buy or exchange (list on request).

D. A. Wright would appreciate any materials on the Hydnaceae.

W. J. Sundberg would like to obtain reprints, etc. on systematics of resupinate fungi (for class use) and any pre-1960 reprints on taxonomy of the fleshy fungi (especially agarics).

HELP! THE NEWSLETTER NEEDS YOUR HUMOR. CONTACT THE EDITOR.
POSITIONS WANTED

ANONYMOUS: An MSA colleague seeks a position with more responsibilities in administration. Experience includes over 20 years in teaching, administration, and research in government, universities, and industry in both the U.S. and abroad. Resume is available. Contact W. J. Sundberg who will forward information to our MSA colleague.

SUSAN C. RABATIN is seeking a position in government, private industry, or academia. She finished her Ph.D. in 1980; her research interests include the ecology and physiology of the vesicular-arbuscular mycorrhizal symbiosis, particularly the role of the relationship in plant ecology. Postdoctoral fellowship recently completed with Dr. L. H. Rhodes at the Ohio State University and additional postdoctoral experience in western land reclamation.

JOHN W. MC CAIN seeks employment teaching in a university or small college in the areas of plant pathology, mycology, or botany. Ph.D. in plant pathology under J. F. Hennen at Purdue University (thesis defense: January, 1983) on a developmental study of Hemileia vastatrix. He would like to be involved in the application of spore, sorus, and thallus ontogeny studies to plant disease problems; also interested in biogeography of plant pathogenic fungi. Eight years experience as graduate assistant in teaching plant pathology and botany (named outstanding Botany T.A.) and as assistant curator of the Arthur Herbarium at Purdue; also 4 years of association with plant disease diagnostic clinic.

EDMOND R. BADHAI'I is seeking a research/teaching position. He received his Ph.D. in 1983 in Mushroom Physiology.

ZACHARIAH SIMON is searching for a research or teaching assistantship or postdoctoral fellowship. He has a masters degree and a Ph.D. (December, 1982) in Mycology.

VACANCIES FOR MYCOLOGISTS

A RESEARCH TECHNICIAN position (full time) will be available January 1, 1984. Qualifications necessary must include a masters degree in biological science, interest and work experience with light and electron microscopy. Contact Dr. Richard J. Howard, DuPont Experimental Station, Biochemistry 335, Wilmington DE 19898, for further information.

The Department of Botany, University of Georgia seeks a full time ELECTRON MICROSCOPY RESEARCH TECHNICIAN. Proficiency in EM specimen preparation, sectioning, operation of TEM and SEM, basic photographic darkroom techniques, and microbiological culture techniques is desired. Background in Biology necessary (Geology and Mycology desirable). Research concerns morphology of endolithic marine fungi. Position available September 1, 1983. Salary: $11,400 per year with potential 10% annual raises. For information contact Dr. David Porter, Botany Department, University of Georgia, Athens, GA 30602. Phone (404) 542-3732.

Boyce Thompson Institute for Plant Research wants a full-time RESEARCH ASSISTANT. Position available June 1, 1983. To assist in research (emphasis on IMMUNOCYTOCHEMISTRY) and associated lab work on factors involved in growth and differentiation of Uromyces germ tubes. B.S. or M.S. in Biology required, experience in light and transmission electron microscopy preferred. Salary: $11,500-$13,000. For more details contact Dr. H. C. Hoch, Department of Plant Pathology, New York State Agricultural Experiment Station, Cornell University, Geneva, NY 14456. Phone (315) 787-2332.

SEND YOUR ART WORK TO WALTER J. SUNDBERG
POSTDOCTORAL POSITIONS AVAILABLE

College of Environmental Science and Forestry: Postdoctoral Fellowship available in the BIOSYNTHESIS OF ABSCISIC ACID BY FUNGI. Need experience with enzyme isolation and/or isolation of sub-cellular organelles. Contact David H. Griffin, Dept. of Env. and For. Biology, College of Env. Sci. and Forestry, Syracuse, NY 13210.

ASSISTANTSHIPS AND FELLOWSHIPS AVAILABLE

Auburn University: Several graduate research and teaching assistantships in MYCOLOGY, MYCOTOXICOLOGY, and MICROBIAL GENETICS are available. Contact for more information: Gareth Morgan-Jones, Dept. of Botany & Microbiology, Auburn University, Auburn, AL 36830.

Central Washington University: Teaching appointments or assistantships are available (on competitive basis) for students wishing to work toward a master's degree. Students must be interested in working on the TAXONOMY OF HOLOBASIDIOMYCETES. For further information, contact David R. Hosford, Dept. of Biological Sciences, Central Washington University, Ellensburg, WA 98926.


Humboldt State University: 1-3 student assistantships may be available for 1983 (fall or winter). The assistantships are for SYSTEMATIC STUDIES IN THE MACROFUNGI. Contact David Largent, Dept. of Biology, Humboldt State Univ., Arcata, CA 95521.

Frostburg State College: For M.S. in BIOLOGY (ENDOMYCORRHIZAE) for 1984-85 academic year. Contact W. J. Vail, Dept. of Biology, Frostburg State College, Frostburg, MD 21532.

University of North Carolina at Wilmington: Teaching Assistantships available (competitive). Dr. D. E. Padgett is interested in contacting potential graduate students (for M.S. program in MARINE BIOLOGY) who have an interest in ESTUARINE and MARINE MYCOLOGY. Write David E. Padgett, Biology Dept., Univ. of N.C. at Wilmington, Wilmington, NC 28403.

State University of New York: One research assistantship is available in January, 1984 in the College of Environmental Science. Contact C. J. K. Wang, Dept. of Forest Botany, SUNY, College of Environmental Science, Syracuse, NY 13210.

Southern Illinois University: Doctoral Fellowship, with $8,500 stipend plus tuition waiver for each of 3 years (university-wide competition). Also Teaching Assistantship (available on Departmental competitive basis) for M.A. or Ph.D. aspirant in SYSTEMATIC MYCOLOGY. Duties in General Biology, General Botany and/or Forest Pathology. Contact W. J. Sundberg, Dept. of Botany, SIU, Carbondale, IL 62901.

DON PFISTER HAS COPIES OF D. P. ROGERS' "A BRIEF HISTORY OF MYCOLOGY IN NORTH AMERICA"
CLAUDE VEZINA, formerly of Ayerst Laboratories, is now with Institut Armand-Frappier, 531 boul. des Prairies, Laval-des-Rapides, Laval, Quebec, Canada H7V 1B7.

ROGER P. KAISER has accepted a position in the Biological Research section of Monsanto Agricultural Products Co. in St. Louis, MO. Dr. Kaiser is a graduate of Kansas State University and Pennsylvania State University and has worked in Agricultural Chemicals Research for Diamond Shamrock Corp. since 1980.

LARRY BLANTON will spend a year, starting in October, as a NATO Fellow at the Culture Centre of Algae and Protozoa in Cambridge, England studying the relationships between soil amoebae and mycetozoans.

THOMAS C. HARRINGTON is now Assistant Professor in the Department of Botany and Plant Pathology, University of New Hampshire, Durham, NY 03824.

FRANK DICOSMO has accepted a faculty appointment in the Department of Botany, University of Toronto, Toronto, Ontario, Canada M5S 1A1.

FRED RHOADES had his assignment changed from Assistant Professor to Research Associate in Biology because the mycology teaching position at Western Washington University was eliminated.

LINDA J. SPIELMAN is now a Postdoctoral Fellow with Dr. Martin Hubbes, Faculty of Forestry, University of Toronto, Toronto, Ontario, Canada M5S 1A1.

GARY F. LEATHAM has been hired to the staff of the U.S. Forest Products Laboratory, P.O. Box 5130, Madison, WI 53713.

GASTÓN GUZMÁN is now working in a new institution outside of Mexico City where he is Co-director of the Flora de Mexico Program. He is also starting a new Mycological Herbarium. His new address is Apartado Postal 63, INIREB, Xalapa, Veracruz, Mexico.

HAROLD W. KELLER will be the Director of the Office of Sponsored Projects (OSP) at the University of Texas at Arlington on July 1, 1983. He will also carry faculty rank as Associate Professor of Biology in the Department of Biology. All of his slime mold collections will be deposited in the University Herbarium. His new address is: OSP, P.O. Box 19145, The University of Texas at Arlington, Arlington, Texas 76019.

ROGER GOOS will leave the Department of Botany chair at the University of Rhode Island after 12 years to return to full-time teaching and research.

LINDSAY S. OLIVE will now be involved in part-time research at the University of North Carolina, Highlands Biological Station during May to October and at the University of Hawaii at Manoa (Department of Botany), Honolulu, Hawaii 96822 during January to March, 1984. He retired from the University of North Carolina at Chapel Hill in June, 1982.

ANDREW S. METHVEN will be moving on Sept. 1, 1983 from San Francisco State University to the Department of Botany, University of Tennessee, Knoxville, Tennessee 37916 to begin work on his Ph.D.
TRAVELS AND VISITS

Visitors to H. D. Thiers' laboratory and the Herbarium at San Francisco State University since January 1 include: HOWARD BIGELOW, ROBERT FOGEL, JOSEPH AMMIRATI, JAMES TRAPPE, and WALTER SUNDBERG.

GASTÓN GUZMÁN was invited to Tulane University in April where he presented two lectures—one on the use of fungi in the tropics and the other on Psilocybe.

ABRAHAM A. HELD visited with Dr. Lauritz W. Olson of the Institute of Genetics, University of Copenhagen and with Dr. Lene Lange of the Institute of Seed Pathology, Hellerup, Denmark during April 1-7, 1983.

JAN KOHLMEYER presented a seminar and visited laboratories at the Department of Botany, University of Rhode Island on April 14, 1983.

CECILIO BARRERA of the Department of Botany, New Mexico State University visited Garry T. Cole's lab in Austin from January to May, 1983 to study the ultrastructural aspects of arthrospore formation in Mucor rouxii.

AKIRA SETO, Research Laboratory, The Nisshin Oil Mills, Ltd., 3,1-Chome, Chiwaka-cho, Kanagawa-ku, Yokohama, Japan has completed a year of study on lipids in marine algae and fungi with C. W. Hessel wiltine and H. L. Wang.

JIM CLARK spent four months of his sabbatical leave in the laboratory of O. R. Collins at the University of California, Berkeley learning photospectometry techniques.

GIOVANNI PACIONI, Instituto Scienze Ambientali, Universita L'Aquila, Italy has received a NATO Fellowship to study the phylogeny of hypogeous Cortinariaceae with Robert Fogel at the University of Michigan during 1983.

Recent visitors to the Farlow Library and Herbarium include: J. KAPLAN, University of New Hampshire; D. E. DESJARDINS and A. S. METHUEN, San Francisco State University; B. M. THIERS, New York Botanical Garden; B. LOWY, Louisiana State University; S. KAYE, Boston Latin School; and L. RYVARDEN, University of Oslo.

JACK STATES will visit D. Hosford at Central Washington University in the fall of 1983 to work on Rhizopogon in Pinus stands.

HON H. HO has just returned from a five-month sabbatical in China. While there, he worked with Professor YU YONG-NIAN, Department of Mycology, Institute of Microbiology, Academia Sinica at Beijing and Professor JU JIA-YUN, Department of Plant Protection, Nanjing Agricultural College at Beijing, on the identification of Phytophthora spp causing plant diseases in China. He also visited various Chinese universities, agricultural colleges and research institutes and presented seminars on the biology and taxonomy of Phytophthora.

DEXTER H. HOWARD reports the following visitors to the Collaborative California Universities-Mycology Research Unit since November, 1982: Dr. G. MARQUIS (University of Montreal), D. J. DRUTZ (University of Texas), and R. D. DIAMOND (Boston University).

On April 12-15, 1983, SANDRA ANAGNOSTAKIS attended the British Mycological Society meeting in Bath, England and presented two papers in a symposium on "The Fungal Mycelium". In the following week she visited C. Caten and J. Croft in Birmingham, J. Weber, C. Brasier, and J. Gibbs at Alice Holt Lodge in Farnham, and finally spent a day with J. Manners exploring the chestnut trees in The New Forest looking for Endothia radialis.
ROBERT FOGEL presented a seminar entitled "Contribution of mycorrhizae to nutrient cycling of forest ecosystems" at the University of Illinois-Chicago on February 17, 1983.

G. H. NEIL TOWERS and FRANK DICOSMO will present a paper entitled "Stress and secondary metabolism in cultured plant cells" at the Phytochemical Society of North America's 23rd Annual Symposium, July 5-8, in Tucson, Arizona.

On April 5-7, GARY LEATHAM reports three workshops were held in Wisconsin to teach people how to cultivate the forest mushroom *Lentinus edodes* on small diameter hardwood logs. One thousand people attended the Wisconsin Dept. of Natural Resources-sponsored workshops.

DICK KORF will coordinate both a pre-IMC3 Discomycete Workshop for specialists and a pre-IMC3 Foray with special emphasis on Discomycetes (and "taught" by the specialists who participated in the workshop) in August, both in the Gumma Prefecture and Nikko National Park area of Japan.

GARRY T. COLE presented a seminar entitled "Coccidioides immitis: A model for characterizing chemical and immunological properties of the fungal cell wall" to the Dept. of Bacteriology and Mycology, Pasteur Institute, Paris, France, on March 8, 1983.

HARRY THTERS gave a lecture to the Los Angeles Mycological Society in January on "Fungi of Southern California". He also lectured to the Los Angeles County Mushroomers in March on "Mushrooms in the California Landscape". In May he presented a seminar at the University of California at Davis on Australian fungi.

IRA F. SALKIN and JOHN HAINES headed a two-day workshop entitled, "Mycology--an overview", at the annual meeting of the American Society for Microbiology.

ROBERT MACHOL lectured on "Old mushroom books" at the U. S. Dept. of Agriculture, in Beltsville, Maryland.

ELIZABETH M. O'HERN, Health Scientist Administrator at the National Institutes of Health, presented a paper, "Research in Medical Mycology" at institutes and medical colleges in Beijing, Nanjing, and Guangzhou, Peoples' Republic of China. She was a member of the People-to-People Microbiology Delegation to China, sponsored by the Chinese Association of Science and Technology and held March 28-April 15, 1983.

S. L. STEPHENSON presented a paper, "Myxomycetes associated with Southern Appalachian spruce-fir forests", at the 58th annual meeting of the West Virginia Academy of Science on April 16, 1983.

JACK STATES gave an address to the Intermountain Society of American Foresters entitled, "Mycophagy in the tassel-eared squirrel and its relationship to the mycorrhizae of Ponderosa pine". Also, at the invitation of the Interdepartmental Biology Seminar Committee, he recently presented a seminar entitled "Squirrels, trees, and struggles: an interdependent interaction in a Ponderosa pine forest" at the University of Wyoming.

C. J. K. WANG presented, "Microfungi and human affairs", at the Tri-Beta Biological Honor Society Initiation Banquet at Colgate University.

JANE C. TROLINGER presented a paper entitled, "Epidemiological Studies of Botrytis cinerea on Exacum affine" at the 7th Botrytis Symposium in Aberdeen, Scotland, September 6-10, 1982.
WALTER J. SUNDBERG presented "Fungus Bowl: East vs. West" at the San Francisco Mycological Society's Fungus Fair on Jan. 16, 1983. In conjunction with D. Kost, he also presented "Hypocrea latizonata—a Rare Mycoparasite New to Illinois" to the Illinois State Academy of Science in April.

JOHN COOKE coordinated and hosted the New England Mycological Meeting held April 16, 1983 at the Avery Point Campus, University of Connecticut.

ERICA ROWE presented a lecture on "The impact of ultrastructural studies on the taxonomy of the Fungi Imperfecti" to the Dept. of Biological Sciences, Cortland College, SUNY.

ANNA BUJAKIEWICZ (Anna E. Jenkins Postdoctoral Fellow at Cornell University) presented a seminar to the Dept. of Biological Sciences, Cortland College, SUNY on "Macrofungi of the Carpathian Forest on Mount Babia (Southern Poland)."

JERRY MOTTA reports that the fourth MIDDLE ATLANTIC STATES MYCOLOGY CONFERENCE was held at the University of Maryland, College Park, May 7. Sponsored by the Department of Botany, some 35 mycologists from six states and the District of Columbia met to hear LAFAYETTE FREDERICK speak on "Wall Structure and Ontogeny in Neurospora Ascospores". Nine additional papers were presented.

B. C. SUTTON, Chief Mycologist of the CMI, presented a seminar on "Taxonomy of Coelomycetes and the Plant/Forest Pathologist" at SUNY, College of Environmental Science and Forestry, Syracuse, NY on June 22, 1983.

HERB SAYLOR reports that during the past eight months, the following presented lectures to the Mycological Society of San Francisco at their monthly meetings: DAVID LARGENT (on Entolomataceae), JOSEPH AMMIRATI (on Cortinariaceae), WALTER SUNDBERG (on Unusual Fungi), ED BUTLER (on Plant Parasitic Fungi), HOWARD BIGELOW (on Northeastern Fungi), and JAMES TRAPPE (on Western Hypogeous Ascomycetes).

JACK AND JILL

Two pines, Jack and Jill,
Grew on a hill.
They thirsted for some water.
Jack's health went down,
Got rot of the crown;
Jill thrived, she was mycorrhizal!!!

Indre J. Bildusas
S. L. STEPHENSON was awarded a faculty development grant of $1000 to support his scholarly activities during the 1983-84 academic year by the Fairmont State Foundation.

IRA F. SALKIN has been elected a Fellow of the American Academy of Microbiology.

FRED T. WOLF received a Meritorious Teaching Award of the Association of Southeastern Biologists at a meeting at the University of Southwestern Louisiana on April 15, 1983.

CONSTANTINE J. ALEXOPOULOS was nominated Honorary President of the International Mycological Association. His nomination will be announced at the IMC, meeting in Tokyo. He was also unanimously elected an Honorary Member of the British Mycological Society at its December 1982 meeting.

ABRAHAM A. HELD was promoted to the rank of Professor as of January 1, 1983.

R. E. KOSKE, of the University of Rhode Island, was promoted to Associate Professor.

G. GUZMAN was designated Senior Research Associate at the Mesoamerican Ecology Institute at Tulane University.

DAVID R. HOSFORD was promoted to Full Professor in Biology in Spring, 1983. He also was nominated for Distinguished University Professor for Public Service (outcome pending).

TIMOTHY J. BARONI was recently awarded a University Awards Program Faculty Research Fellowship and Grant-in-Aid by the Research Foundation of the State University of New York for his proposal "SEM studies on basidiospores of the genus Clitopilus".

ZACHARIAH SIMON was awarded his Ph.D. from the University of Calicut.

G. KAYE received an MS in Library Science from Simmons College in May, 1983. (Her loyalties are still strongly mycological, however!).

D. H. PFISTER has received a grant from the Harvard Graduate Society to continue his bibliographic work on Exsiccatae containing fungi.

LOIS TIFFANY, in ceremonies at the Capitol in Des Moines, Iowa was awarded the first Iowa Governor's Science Medal for excellence in science teaching. She was also recently honored with a Distinguished Iowa Scientist Award by the Iowa Academy of Science.

ANDREW METHVEN was recently selected as Honor Graduate (Most Outstanding Master's Degree Student) of the June, 1983 graduating class at San Francisco State University. He also was a recipient of the Esther Colton Whited Scholarship from the Mycological Society of San Francisco.

BRADLEY THOMPSON of Humboldt State University also received an Esther Colton Whited Scholarship from the Mycological Society of San Francisco.

DENNIS DESJARDINS was awarded two scholarships from the Alumni and the University to continue his mycological studies at San Francisco State.

HUBERT A. LECHEVALIER received an honorary Doctor of Science degree from Université Laval on June 15, 1983.
PERSONAL NEWS

C. L. FERGUS will retire January 30, 1983 after 35 years on the faculty at Pennsylvania State University. He plans to continue certain aspects of mycology, including being curator of the Mycological Herbarium.

TERESA DIANE LEATHAM, daughter of Gary and Kathy Leatham, was born on December 12, 1982.

IAN CARL McCAIN, son of John W. McCain and spouse, was born on December 26, 1982.

ELIZABETH ELSA TAYLOR, daughter of Dr. Elsa Taylor, was born on June 6, 1981.

SARAH KATHERINE VINCENT, daughter of Michael A. Vincent and spouse, was born on October 14, 1982.

We regret to report the following deaths:

SISTER MARY CECILIA BODMAN, on December 15, 1982. A former graduate student and research assistant with Dr. G. W. Martin and formerly head of the Department of Biology at Mundelein College, Chicago, Dr. Bodman worked on Tremellales and Boletaceae. She had recently been identifying Tremellales at the Field Museum of Natural History, Chicago.

DANIEL ELLIOT STUNTZ, on March 15, 1983. Dr. Stuntz, a student of J. W. Hotson and J. S. Boyce, spent more than 45 years studying and teaching at the University of Washington. He was expert in Basidiomycete classification, an authority on Inocybe, and was a founder of and scientific advisor to the Puget Sound Mycological Society.
Arnold S. Foudin is interested in establishing communications with other mycologists working with D. maydis or D. carbonum and/or the immunology or biochemistry of fungi as it pertains to identification or biocontrol.

FRIENDS OF THE FARLOW

The organization devoted to Cryptogamic Botany, Friends of the Farlow, is entering its second year. Extended services by the Farlow Library have been provided and a book sale by mail will be held. Two issues of the FoF Newsletter have been published. The second annual meeting and dinner will be held early in November. Membership information is available from: The Farlow Library, 20 Divinity Ave., Cambridge, MA 02138.

POSSIBLE WORKSHOP

Martin M. Kulik is initiating organization on a workshop dealing with a Diaporthel/Phomopsis soybean disease complex. To be held at the Beltsville Agricultural Research Center within the next 12-15 months. It would include paper sessions, discussions, etc. If interested in more information, etc., write Dr. Kulik at the Seed Research Laboratory, Room 103, B-006, BARC-West, Beltsville, MD 20705.

MEDICAL MYCOLOGY

The Collaborative California Universities-Mycology Research Unit (CCU-MRU) is a group with professional interests in Medical Mycology. For information on the CCU-MRU, their activities, and bulletin, contact them at: CCU-MRU, Department of Medicine, Center for the Health Sciences, Los Angeles, CA 90024.

MORE ON BLACK AND WHITE PRINTS FROM KODACHROMES

The note by George Barron in the December 1982 issue of the newsletter concerning the Polaroid slide-to-photograph copier merits some comment. This system of producing black and white negatives from colour transparencies is fine provided one does not wish to make enlargements from the negatives. The reader may wish to examine Fig. 2 of my paper with J. A. MacKinnon in the March-April 1983 issue of Mycologia, which was produced using the Polaroid apparatus. This enlargement reveals that the negatives produced by this machine are actually a series of lines much like those of a television screen. A contact print of such a negative is fine; any enlargement is somewhat embarrassing. Combined with the high price of film for this process (about $10 Canadian for 10 B&W photos and negatives), this makes this method of preparing negatives somewhat unattractive.

An alternative, which I recently adopted, is a slide copier, manufactured by Soliger, which attaches to the front of a 35 mm camera body like a lens. The copier (about $100 Canadian) allows cropping of slides and has a built-in light diffuser. It is more versatile than the Polaroid process, and, since one can use any film available for 35 mm cameras, it is considerably cheaper. From a slide it is possible to make B&W or color negatives, or duplicate slides. Although I have not done so, it should be possible to make B&W positives by making B&W copies of B&W negatives. The only disadvantage is the need for a strong white light source, since the copier has a fixed-focus f16 lens. A less expensive version of the copier, without the cropping alternative and the light diffuser, is available for about $30 Canadian.

Keith Seifert
CBS, Baarn, Netherlands
ASM BACHELOR'S LEVEL CERTIFICATION

In order to recognize persons with appropriate education and experience in microbiology, the American Society for Microbiology has established a bachelor's degree level registration program. The areas covered are: (A) Clinical and Public Health Microbiology, (B) Research and Development Microbiology, and (C) Consumer Products and Quality Assurance Microbiology. Certification testing emphasizes applied microbiology, and in each area covers lab instrumentation, lab preparations, sample collection and handling, lab procedures, and lab operations. For further information contact: National Registry of Microbiologists, American Society for Microbiology, 1913 I Street, NW, Washington, D.C. 20006. (202) 833-9680.

DENIS THIENPONT PRIZE IN PARASITOLOGY AND MYCOLOGY

The Janssen Research Foundation at Beerse, Belgium, has created the biennial scientific "Denis Thienpont" prize, amounting to $25,000 (U.S.). The prize will be awarded under the auspices of the "Koninklijke Academie voor Geneeskunde van België" and the "Academie Royale de Médecine de Belgique", and its first presentation will take place in 1985.

The "Denis Thienpont" prize will be awarded to one investigator, possibly with at most two of his collaborators, presenting an original work--published or not--concerning fundamental or clinical research in parasitology or mycology. Applications must be made on the appropriate form and sent to the Secretary of one of the above-mentioned Academies before December 31, 1984. For more details contact the Secretary's Office, Koninklijke Academie voor Geneeskunde van België, Hertogsstraat 1, 1000 Brussels, or the Académie Royale de Médecine de Belgique, 1, rue Ducale, 1000 Brussels.

A MUSHROOM POISONING REGISTRY

While serious toxicity from many fleshy fungi such as various Amanita spp. is fairly well defined, there are many others on which data are incomplete. Therefore, the North American Mycological Association (NAMA), through its Toxicology Committee, is seeking to collect information on mushroom poisoning cases by establishing a Mushroom Poisoning Case Registry. Major and continuing interest will be in the collection of NEW case information. However, to help establish a broad data base, they also wish to solicit information for any previous cases for which one has confidence in the data. To learn what information is necessary (and to have some on hand for future use--ed.) and to obtain NAMA Mushroom Poisoning Case Registry Report Forms, contact Dr. Kenneth W. Cochran, Dept. of Epidemiology, Room 2550, School of Public Health, University of Michigan, Ann Arbor, MI 48109. Phones (all AC 303): Lab 764-5469, Dept. Office 764-5453, Home 971-2552.

GORDON RESEARCH CONFERENCES

In 1983, a total of 107 Gordon Research Conferences will be held. At the mailing of this newsletter several are already over. Some still upcoming and of possible interest (editor's selection) to MSA members include: "Membranes and Transport Phenomena", July 18-22; "Microbial Degradation", July 25-29; and "Aerobiology", August 8-12. For other titles and/or more information contact Dr. Alexander M. Cruickshank, Gordon Research Conferences, Colby-Sawyer College, New London, New Hampshire 03257. Phone: (603) 526-2870.

A NEW PUBLICATION

A LATE NOTE

Andrew S. Methven wishes collections of Lactarius (with field notes—especially on the latex, staining reactions, and colors of the basidiocarp). See Changes in Affiliation for Andy's new address.

ASSOCIATIONS AND CLUBS

These enthusiastic groups form a grassroots type of mycological organization which provides education, enjoyment, edification (and edibles) for many. A number of these groups are affiliated with the MSA (see page 53); this involves joining the Society on the same terms as a Personal Member, i.e., dues of $25.00, and receipt of MYCOLOGIA and the semiannual MSA NEWSLETTER.

The MYCOLOGICAL SOCIETY OF SAN FRANCISCO (see MSA Newsletter 33[1]: 22), an MSA affiliated society, presented its scientific advisor Harry D. Thiers with the two World War II era volumes of Mycologia missing from his otherwise complete set. They also presented scholarships to two mycology graduate students (see Honors, Awards, and Promotions) and heard lectures by several MSA members (See Papers, Seminars, Symposia, and Workshops).

The ARKANSAS MYCOLOGICAL SOCIETY was initiated on January 17, 1982. The AMS has monthly forays, March through December, and they produce a bimonthly newsletter entitled Arkansas Fungi.
Officers: President, Jay Justice; Editor, Edith Nelson; NAMA Mycophagy Representative, Jim Althaus.
Membership: Dues are $15.00 per calendar year (includes membership in NAMA as well). Current membership is approximately 20. Contact J. Justice, Route 1, Box 141-D, Alexander, AR 72002.
Major Events: Monthly forays (March through December) and fall workshop.

Serving west central New Hampshire and east central Vermont is the MONTSHIRE MYCOLOGICAL CLUB. According to their quarterly Newsletter, this group meets monthly and has in-season forays on the third Sunday of each month.
Officers: President, Dorothy La Fountaine; Secretary, Geraldine Goslar; Newsletter Editor, Ruth Scanlan.
For more information, contact: Ruth Scanlan, Jones Hill Road, Enfield, NH 03748.

The CONNECTICUT-WESTCHESTER MYCOLOGICAL ASSOCIATION publishes the COMA News and, at least during the spring and summer, has weekly foray events.
President: Sandy Shaine; Vice President, Sylvia Stein; Membership, Karin Rabin; Newsletter editor, Naomi Stein.
For more information contact: COMA, Box 137B, Route 3, Pound Ridge, NY 10576.

The ILLINOIS MYCOLOGICAL ASSOCIATION (see MSA Newsletter 33[1]: 22) welcomes visitors to its monthly meetings which are held on the first Monday of each month at 7:45 PM at the Field Museum, Chicago, Illinois. Elizabeth Farwell (P. O. Box 747, Libertyville, IL 60048) can tell you more about the IMA.

The WILLAMETTE VALLEY MUSHROOM SOCIETY (see MSA Newsletter 33[2]: 64) has changed its address to: 2340 West Nob Hill SE, Salem, Oregon 97302.

For LOS ANGELES MYCOLOGICAL SOCIETY activity info., call (213) 292-1900 anytime.
AFFILIATED SOCIETIES

The Boston Mycological Club, Patrick Peterson, Treasurer, 21½ Inman St., Cambridge, MA 02139.

Colorado Mycological Society, Joan L. Betz, Secretary, 501 Clermont Parkway, Denver, CO 80220.

The Mycological Society of San Francisco, Herbert Saylor, President, 28033 High Country Dr., Hayward, CA 94542.


Ohio Mushroom Society, 288 E. North Avenue, East Palestine, OH 44413.


Phacidium coniferarum (Hahn) DiCosmo, Nag Raj, & Kendrick
(See Canad. J. Bot. in press)

A. Vertical section of ascoma.
B. Detail of asci, anastomosing paraphyses invested in mucilage, and ascospores.
C. Detail of ascogenous elements.