

Newsletter of the Mycological Society of America

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April 15: Deadline: *Inoculum* 53(3)
June 22-26: MSA 2002, Corvallis OR

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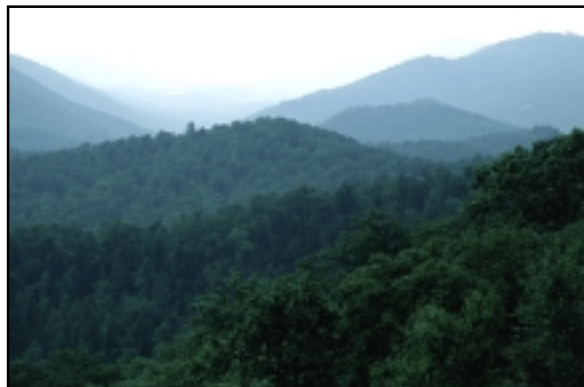
Sign at Gatlinburg, Tennessee entrance

Discovery of a New Obligate Tree Canopy Myxomycete in the Great Smoky Mountains National Park

by Harold W. Keller and Melissa Skrabal

Questions and comments should be sent to Harold Keller via Central Missouri State University, Department of Biology, 306 WC Morris, Warrensburg, MO 64093 or Email <haroldkeller@hotmail.com>.

INTRODUCTION: The Great Smoky Mountains National Park (GSMNP), which comprises more than 200,000 hectares, serves as a refuge for one of the richest and most diverse biotas in the temperate regions of the world. It also has the largest remaining tracts of old growth forest in Eastern United States, estimated at 40,000 hectares. A new research initiative called the All Taxa Biodiversity Inventory (ATBI) under the rubric of a non-profit organization, Discover Life In America (DLIA), represents a research effort to inventory and identify all of the life forms in the park. Cryptogam sampling for fungi, lichens, mosses, liverworts and ferns in the park has been confined to ground sites. Life in treetops must adapt to different environmental conditions and corticolous Myxomycetes found there are often distinct from the surrounding biotic communities (Keller and Braun, 1999).



Panoramic view of forest terrain from tree canopy

METHODOLOGY: The All Taxa Biodiversity Inventory management plan established 20 one-hectare study plots scattered through the park. Site selection was based on major forest/vegetation types, elevation and relative accessibility. Our tree canopy biodiversity study emphasized champion-sized trees of certain species. Some of these trees were up to 55 meters in total height. Safety was emphasized in all of our activities. Student climbers completed a training school taught by a professional arborist. The double rope climbing technique was used because the climbers could advance to higher levels in the tree canopy. A Big Shot slingshot was used to shoot a slick line (attached to a weighted throw bag) over crotches and branches usually at heights of 18 to 24 meters. A climbing rope was attached to the slick line and pulled over the limb. This rope was tied to a climbing saddle and a friction knot used to vertically ascend the rope. Each tree climbed was entered in a database that included a tag number for each tree, numbered samples at three meter intervals up to 40 meters measured with elevation lines, diameter at breast height, total height of tree, climber's name, observations of *in situ* specimens on the tree trunk, place location description and global positioning system reading, altitude, and weather conditions. All student climbers were given tutorials that included lecture slide shows, demonstration specimens, practice keying, and field experience with experts from the multidisciplinary research team that enabled them to recognize and collect the targeted groups of organisms. A total of 240 trees representing 35 different tree species were climbed during two three-week periods in June, July and August of calendar years 2000 and 2001.



Melissa Skrabal untying throw line from climbing rope.

LABORATORY MOIST CHAMBER CULTURES: Bark samples were scanned by student climbers in the field for plasmodial tracks and myxomycete fruiting bodies. Corticolous myxomycetes that grow and fruit on the bark surface or epiphytes on living trees are usually less than 1 mm in diameter. Sometimes the sheer number or bright colors of fruiting bodies makes it easier to see them on the bark but it takes a sharp eye and knowing what to look for to find them. Most field researchers have collected bark samples at about two meters or less so our knowledge of corticolous myxomycetes is based on samples taken near ground level. The moist chamber culture technique was used to process field-collected samples of bark and epiphytes from living trees and vines by placing the bark sample in a sterile Petri dish with sterile filter paper lining the bottom of the dish that serves as a wick. The contents were moistened

with the addition of 10 ml of sterile glass distilled water. Any excess water was poured off in 24 hours and the cultures incubated at 25°C for up to four weeks. Cultures were examined daily to observe plasmodial and fruiting body development, record data on time of maturation, and harvest fruitings in a fresh fully mature state



Melissa Skrabal collecting and bagging lichens.

for preservation and identification (Keller and Braun, 1999).

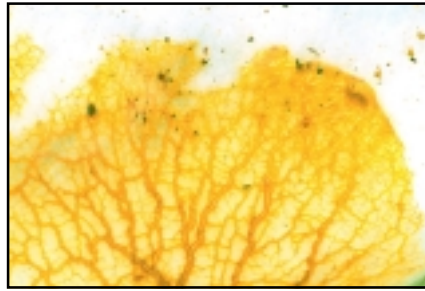
TREE CANOPY MYXOMYCETES: Are there any myxomycete species confined to the upper tree canopy? My (HWK) collecting and climbing experience dating back to the 1960s mostly with *Juniperus virginiana* (Red Cedar) trees in the midwest and southeastern United States, suggested that myxomycete taxa found on the trunks extended up into the tree canopy. These trees were climbed either with pole climbing spurs and a safety belt or free-handed.

Melissa Skrabal was the Central Missouri State University undergraduate student who discovered the first obligate tree canopy myxomycete, a new species in the genus *Diachea*. Melissa kept a field diary of her discovery and excerpts are reproduced here.

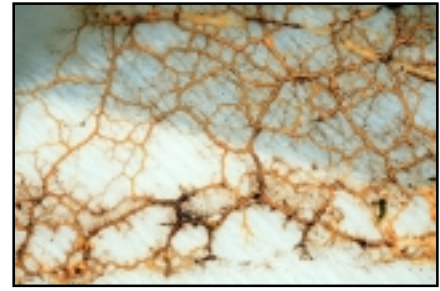
The drive was only about 10 minutes from the Cades Cove House to the Turkey Pen Ridge Trailhead. We slung our 70-pound gear bags containing a climbing harness, 120-foot rope, slick line, gloves, and more, onto our backs and began the hike up the trail. After hiking slightly more than a mile we came to a fork in the trail. We were impatiently itching to climb the White Oak trees in the area but the trees were about 30 meters tall. I figured we would be up and down the trees in no time and with little accomplished due to their small size. We gave our "Big Shot" slingshot a test run on a White Oak tree. The throw line was shot up so accurately over the first high branch it took only a few minutes to rig the climbing rope. Coordinating all my body parts in a rhythmic upward motion with synchronized pull-ups and pelvic thrusts I was able to reach a height of 6 meters where I secured number 88 to the tree. After filling a small white bag halfway I folded the top edge over and let it cruise to the ground. The ground crew member labeled the sample bag with the appropriate data. An elevation line attached to each climber's harness monitored collection height. These lines were handmade by our ground crew team out of paper dog tags attached every foot to a lightweight line and labeled with a permanent marker. I continued to climb and paused at about 9 meters to take

another sample. During my usual scanning of the bark before removal I noticed an unusual snake-like pattern on the bark. Suddenly flashbacks of Dr. Keller's slide show on the myxomycete life cycle vividly appeared in my mind. Just the night before, Dr. Keller had presented a lecture to all of the tree canopy research team members on the different stages in the myxomycete life cycle. The tracks on the bark in front of me looked identical to the remains of plasmodial tracks left by developing myxomycetes. I kept climbing higher as the twisted patterns on the bark seemed to follow my ascent to almost 24 meters. I heard a lot of hooting, hollering, and celebrating as Dr. Keller confirmed the discovery of a very unusual myxomycete. Dr. Keller enthusiastically asked that I come down in smaller steps and sample more bark every 3 meters. Finally, after two hours up in the treetop I reached solid ground. When we arrived back at the Cades Cove House, provided by Discover Life in America and the GSMNP service, I anxiously sorted out the days dazzling findings and placed samples on the porch railing with the plasmodial tracks and the myxomycete sporangia. Dr. Keller confirmed that this was probably a new species of *Diachea* but additional collections and moist chamber culture work would have to be completed. Without any real jaw-dropping fireworks display, we truly had ourselves a very explosive 4th of July.

The great adventure phase of our research project was over and now the laboratory work began. I grew to enjoy the moist chamber cultures seeing the diverse beauty of life forms. In about two-weeks the white oak bark produced the growth of a magnificent yellow plasmodial fan. It spread all over the bark and bottom of the Petri dish leaving distinct veinlike plasmodial tracks just like on the surface of the tree bark. Finally I was able to observe all of the developing stages of the sporangia culminating in a sphere of iridescent gold with a blending of the colors of the rainbow. I never realized such beauty existed in microscopic proportions. This project taught me that trees are made of more than branches and leaves. They consist of a mosaic of mosses, lichens, liverworts, Myxomycetes, bugs, and more. And Myxomycetes are glorious!



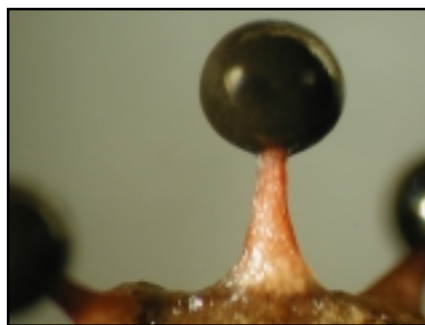
Yellow phaneroplasmodium growing on white filter paper in moist chamber culture. Note the feeding, advancing fan and trailing veins that leave plasmodial tracks on the surface of tree bark. This is the plasmodial stage of a new species of Diachea.



Yellow veins spreading and covering white filter paper in moist chamber culture. Melissa Skrabal observed plasmodial tracks covering extensive areas of a living white oak tree over a distance of 15 meters.

RESULTS: There are three trees, *Quercus alba* (White Oak), *Juniperus virginiana* (Red Cedar) and *Fraxinus americana* (White Ash), in the GSMNP where this taxon was found. All of the sporangia collected in the field were above 3 meters. Approximately 20 moist chamber cultures of bark collected under 3 meters have not yielded the new *Diachea*.

These trees have been climbed at least twice and each time the sporangia were found above 9 meters on the White Oak and 4.6 meters on the Red Cedar. The plasmodial tracks on the White Oak tree extended a distance from 9 to 24 meters. This bright yellow phaneroplasmodium migrates all over the upper and lower surfaces of bark, mosses, and the filter paper in the bottom of Petri dishes. Sporangia fruit on the upper and lower bark surface, on the moss phyllidia, on the filter paper and on the side of the plastic Petri dish. All of the *Diachea* species have gorgeous iridescent peridia but this one is striking because of its glittering golden colors and the contrasting pink to reddish orange stalk. The capillitium is attached to the apex of the columella and the spore ornamentation as

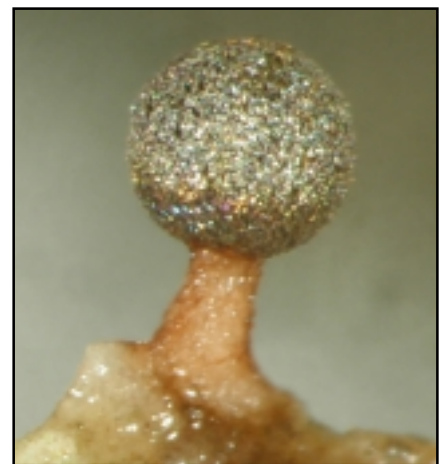


Immature sporangium of Diachea on bark in moist chamber culture.

seen with scanning electron microscopy is unique in the Myxomycetes. What a great experience for an undergraduate student!

LITERATURE CITED: Keller, HW and KL Braun. 1999. Myxomycetes of Ohio: Their Systematics, Biology and Use in Teaching. Ohio Biological Survey Bulletin New Series Volume 13, Number 2 xvi + Pp. 182.

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Mature sporangium with iridescent peridium exhibiting the colors of a rainbow. This new species of Diachea is an obligate tree canopy species never observed or cultured below 5 meters. This is the first documented obligate tree canopy species in the Myxomycetes (plasmodial slime molds). Melissa Skrabal observed sporangia of this Diachea at heights of 25 meters on a living white oak tree.

instruction and certification for climbers. More images are displayed on our webpage at <http://www.cmsu.edu/biology/Faculty/keller.html> and Discover Life in America "Tree Canopy Biodiversity in the Great Smoky Mountains National Park" <http://www.discoverlife.org/nh/tx/Fungi/>. Mike Ferro spent many hours preparing our web page. James Murray served as our research project photographer. Keith Langdon from the GSMNP

and Jeanie Hilten from Discover Life in America provided assistance with equipment, housing and logistics. The multidisciplinary research team included: Drs. Alex Ciegler, lichenologist, Paul Davison, bryologist (mosses and liverworts), Professor Uno Eliasson, Göteborg University, Sweden, Myxomycetes and vascular plants, Professor Thomas Gaither, Myxomycetes and macrofungi, Ken Nelson, volunteer

ecologist, Drs. Jay Raveill, expert on the flora of the GSMNP, David Smith, bryologist, Ted Stampfer, volunteer moist chamber culture specialist. This research project is funded by the National Science Foundation, Division of Environmental Biology, Biotic Surveys and Inventories Program, Award # DEB-0079058 and Discover Life in America Award #2001-26.

The Humongous Fungus -- Ten Years Later

by Tom Volk

Questions and comments should be sent to Thomas J. Volk, Department of Biology, University of Wisconsin -- La Crosse, La Crosse, WI 54601 or Email: volk.thom@uwlax.edu. This article may also be found online as the April 2002 Fungus of the Month by taking a link from <http://TomVolkFungi.net>.



New York Times front page April 2, 2002.



Armillaria gallica fruiting bodies.

Has it already been ten years? On April 2, 1992, the non-mycological world first became aware of very large fungi, thanks to the efforts of Myron Smith, Johann Bruhn, and Jim Anderson. They published a landmark article in *Nature* (Smith, M, J Bruhn and J Anderson, 1992). The fungus *Armillaria bulbosa* is among the largest and oldest living organisms. *Nature* 356:428-431, but no one expected the media blitz and the scientific interest that would follow.

First you'll need to know a bit of background on *Armillaria*, also known as the Honey Mushroom. *Armillaria* (Fr.:Fr.) Stauda is a genus of mostly pathogenic agaric fungi. Perhaps the most

important aspect of the life cycle of *Armillaria* is the formation of rhizomorphs, conglomerations of differentiated parallel hyphae with a protective melanized black rind on the outside. The rhizomorphs are able to transport food and other materials long distances, thus allowing the fungus to grow through nutrient poor areas located between large food sources such as stumps. The rhizomorphs can also act as scouts for the rest of the thallus, searching for new food sources. These proliferative rhizomorphs apparently permit *Armillaria* colonies to spread and become quite large. Thus enters the Humongous Fungus.

The science that led to this seminal *Nature* publication (Smith *et al.* 1992) turns out to be quite interesting and very thorough. The project was actually an offshoot of a grant from the Department of Defense, which funded a project to study the possible biological effects of ELF (Extra Low Frequency) stations in the Upper Peninsula of Michigan.

These ELF stations were built to communicate underground with ocean-going submarines in time of war. The humongous fungus site, which Johann Bruhn had been studying for many years, was actually one of the control sites, nowhere near the ELF stations. Historically, the site (near Crystal Falls, Michigan near the Wisconsin border) had been mostly northern red oak/white birch/sugar maple forest, but the native trees had been harvested with more profitable red pines planted in their place. When the oaks were cut, the stumps were mostly left in the ground to rot. The oaks had been infected with *Armillaria* root rot, but had survived very well because they were not under any stress. However, when pines were planted, some species of *Armillaria* were able to kill the young pine seedlings. The particular species that garnered their attention was *Armillaria bulbosa*, which is now correctly known as *Armillaria gallica*. I'll tell you more about this taxonomic problem later.

The study of Smith *et al.* (1992) was performed by collecting vegetative mycelium of *Armillaria* by "baiting" with small pieces of poplar wood, actually popsicle stick-like tongue depressors. Since *Armillaria* is a wood decay fungus, the mycelium quickly colonized the tongue depressors. The labeled inoculum stick could then be easily collected. Additional subcultures, including tissues and single spore isolates, were made directly from fruiting bodies that appeared in the fall or from the black rhizomorphs and mycelial fans that are always present in the soil or on the wood, especially under the bark. The laborious process of analysis began, first with checking the mating type loci by mating on media in Petri dishes. Molecular techniques were then employed, first looking at mitochondrial DNA (mDNA) restriction patterns. These were both good markers for the study because mating type loci and mDNA restriction patterns are both highly variable within *Armillaria* species. Once these were determined, RAPD (Random Amplified Polymorphic DNA) and RFLP (Restriction Fragment Length Polymorphisms) markers were employed to check for additional heterozygous loci in the

nuclear genome. With these several types of data, they could begin to draw maps of the area to determine the limits of each individual. One of these clones turned out to be quite large, covering 15 hectares (37 acres). Within this area, all the vegetative isolates had the same mating type, the same mDNA restriction pattern, and had the same eleven RAPD products and five RFLP-based markers, each marking a heterozygous locus. These data indicated that this 15 hectare clone is a single organism. However, some argued that this only meant that they had the same alleles at these genetic loci, bringing up the possibility that the samples were from separate, but closely related organisms (or individuals) that arose from separate matings. In their paper, Smith *et al.* (1992) presented some complex statistics that show that the probability of this being the case was infinitesimally small ($P=0.0013$), given that all the samples share all the heterozygous markers examined. Even so, to lend even more credence to their conclusions, eventually they tested 20 RAPD and 27 nuclear restriction fragments that were found to be invariable in the large clone. By far the most likely hypothesis is that this clone reached its enormous size through vegetative growth. Thus the *Armillaria* clone was proven to be quite a humongous fungus. By estimating (very conservatively, I might add) the growth rate of the fungus under their natural conditions and by extrapolating the weight of the clone from smaller soil samples (again very conservatively), Smith *et al.* found the clone to be at least 1500 years old and weigh at least 9,700 kg (more than 21,000 pounds or 100 tons), close to the mass of an adult blue whale. They compared the mass to that of a giant redwood (*Sequoiadendron giganteum*) estimated to be about 1,000 tons, most of which is dead xylem tissue. The conclusion of their paper states, "This is the first report estimating the minimum size, mass, and age of an unambiguously defined fungal individual. Although the number of observations for plants and animals is much greater, members of the fungal kingdom should now be recognized as among the oldest and largest organisms on earth."

Myron Smith wrote to me recently in an

email "I have often been asked something like, 'what made you look for a large fungus?' Like most discoveries (and this is a point that needs to be stressed to granting agencies), we did not set out to make this discovery. Initially, (at least when Jim and I came on the scene) we wanted to find out how mitochondrial DNA was inherited in fungi in nature (Smith, Duchesne, Bruhn and Anderson, 1990). The first year we went out and sampled from a 120 x 60 m area. Nearly every sample was identical for mDNA and mating type. The second year we extended our sampling over a 1 km transect through the area and, again, detected this one wide-spread genotype. By extending the areas sampled in subsequent years, we were finally able to delimit the large area occupied by this genotype and then go on to show that this genotype likely represents an 'individual'."

Although they knew they were publishing a very good paper, Smith, Bruhn, and Anderson never expected what happened next. On that historic publication day, the furor began. Johann Bruhn, at that time at Michigan Technological University in Houghton, Michigan, now at the University of Missouri-Columbia, received the first of many phone calls from the media. Since it was April 2, he thought that this was a late April Fool's joke, but soon more calls began pouring in. All of the major television networks called; all of the major newspapers called from around the world. CNN called and reported that they had a plane in the air and would Johann please drive over to the site and wave so that they could take photos of the fungus. One Japanese businessman called and wanted to set up a partnership to build a boardwalk around the humongous fungus and charge people to view "the pulsating mass of fungus" that was there. Johann reports shutting himself into his office and having the secretary screen the calls one at a time as they came in. The two authors at the University of Toronto, Myron Smith (now at Carleton University in Ottawa) and Jim Anderson (still at the University of Toronto) experienced a similar media deluge. I first became aware of the media hype as I heard Jim Anderson being

interviewed on US National Public Radio. You'll have to talk to the three authors to hear further interesting stories.

The media blitz lasted a month or so, then seemed to dissipate as things got back to normal. However, on May 18, 1992, it all began again. Terry Shaw, then in Colorado with the US Forest Service, and Ken Russell, of the Washington DNR, reported that they had been working on an even larger fungus, *Armillaria ostoyae*, that covered over 600 hectares (1500 acres, 2.5 square miles) south of Mt. Adams in southwestern Washington. The newspaper headlines read "Humongous Fungus has BIG brother out west." The fungus wars had begun. Who had the larger fungus? Questions arose as to who had better proof that theirs was a single organism. Russell and Shaw had only shown that the mating type loci were the same, but they had beautiful aerial photos showing growth of the large colony in a radial pattern, showing where it had killed the conifer trees. Smith *et al.* had a much more convincing argument, with several meticulous lines of genetic evidence showing without a doubt that theirs was a single clone.

Ten years later, we are still experiencing the fungus wars. In August of 2000, Catherine Parks of the US Forest Service in Oregon (along with collaborators Brennan Ferguson, Oregon State University; Tina Dreisbach, PNW Research Station, Forest Service; Greg Filip, Oregon State University; and Craig Schmitt, Wallowa-Whitman National Forest, Forest Service) reported that they had found an even larger fungus (again *Armillaria ostoyae*) in the Blue Mountains/ Malheur National Forest in Eastern Oregon. Their fungus is nearly 900 hectares (2,200 acres or 3.4 square miles or "as large as 1,665 football fields") and is estimated to be more than 2,400 years old. They used methods similar to those of Smith *et al.*, including mating type analysis, but with the addition of DNA fingerprinting, not widely available in 1992. It seems likely that there are larger *Armillaria* clones out there somewhere. Myron Smith wrote to me, "As far as I (and I think this is true for Johann and Jim as well) was concerned, the "Fungus wars" were a non issue; another example

of sensationalistic journalism. The chance of finding "the largest fungus" is incredibly small. Our main point was how to unambiguously identify a genetic individual. That we did find a large individual by chance, however, suggested to us that massive, old fungi are probably not uncommon."

One interesting offshoot of these findings of humongous fungi has been a scientific discussion of "what exactly is an organism?" Most people understand the concept of an organism in an animal, which has very carefully defined limits - and most of it is usually visible as it moves around. However, much of a typical plant and most of a typical fungus is not visible to the naked eye. In particular with fungi, the limits of the individual are not clearly defined. The large question was "are these humongous fungi acting as single organisms?" It was well proven that the genetics of various parts of the humongous fungus organism are identical, but can, for example, one part of the organism communicate with other parts of the organism? Do they share physiology? If different parts are growing through different substrates, are they supplying other parts of the fungus with missing nutrients? Several articles began to appear in the scientific literature including Gould (1992) in which he spent a great deal of time discussing populations of asexually reproducing aphids. One letter to the editor by James Bullock of Oxford University (1992) pointed out some larger clones of plants, including an aspen clone (*Populus tremuloides*) covering 81 hectares and over 10,000 years old. At that time Bullock did not know about the larger *A. ostoyae* clones.

Despite the large size of the mycelia of these humongous fungi, the fruiting bodies (mushrooms) are really quite average in size. However, during a good fruiting season, the honey mushrooms may be quite abundant, producing a widespread biomass. However, the largest single fruiting bodies are produced by perennial polypores (shelf fungi), such as *Bridgeoporus nobilissimus*, *Rigidoporus ulmarius*, and even *Ganoderma applanatum*. Some of these large fruiting bodies may weigh over 160 kg or 300 pounds! Certainly

these are much larger than *Armillaria* fruiting bodies, which are typically 50-100 g each.

I promised to tell you something about why *Armillaria gallica* is the name we should use for this species rather than *A. bulbosa*. *Armillaria* species typically produce a white spore print and have attached to decurrent gills. Most species have an annulus. Delimiting species in fungi is often difficult, but in *Armillaria* the biological species concept, based on mating compatibility, has gained wide acceptance. Until the late 1970's *Armillaria mellea* (Vahl:Fr.) Kummer was considered by most researchers to be a pleiomorphic (highly variable) species with a wide host range and distribution. The pathology literature on *A. mellea* was extremely confusing. The fungus was considered by different researchers to be either a virulent pathogen, an opportunistic pathogen, or an innocuous saprobe. Its host range was one of the broadest known for fungi. It was clear that more than one species must be involved. Because of the difficulty with studying the basidiomata using traditional characters, other methods of study were devised. Hintikka (1973) developed a technique that allowed determination of mating (incompatibility) types in *Armillaria* based on culture morphology of single-spored (haploid) pairings. He and his colleagues found six biological species in Europe. The work was extended into North America, where Anderson and Ullrich (1979) demonstrated that what had been considered as *Armillaria mellea* in North America was actually 10 genetically isolated biological species (North American Biological Species or NABS). Anderson, Korhonen, and Ullrich (1983) found that most of the biological species of Europe (including *A. gallica*, NABS VII or EBS E) were also represented in North America, although the reverse was not true. There is a bit of controversy about what to call this species. Very briefly, the name *A. bulbosa* Velenovský (1927) [a.k.a. *A. bulbosa* (Barla) Velenovský, but Barla's (1887) name *A. mellea* var. *bulbosa* was illegitimate] has a very poorly preserved type specimen. Vladimír Antonín (1986, 1990) of the Czech Republic has examined Velenovský's type specimens (preserved

in a liquid fixative) and has concluded that the specimen could be any of three species. According to Marxmüller (1992) Velenovský's species is identical with *A. cepistipes* Velen. (1920), which has priority, being an older name (see also Termorshuizen and Arnolds, 1987). Another name proposed for this species has been *Armillaria lutea* Gillet, but this species lacks a type specimen, and Gillet's (1874) description could represent any one of three species. *Armillaria gallica* Marxmüller & Romagnesi (1987), which has an excellent type specimens and abundant cultures, is the only name that can unequivocally be assigned to European Biological Species E and NABS VII. See Volk & Burdsall (1995) for a clear explanation of this taxonomic problem.



Fungus Fest sign, Crystal falls, MI

No matter what we call the species, the people of Crystal Falls, Michigan have become quite enamored with the nearby humongous fungus. They now hold an annual "Fungus Fest" every September. You can buy a humongous fungus burger (unfortunately not made with *Armillaria*, which is in fact a delicious edible mushroom) or fungus fudge (for some reason this does not sound appealing to me...) in their restaurants.

Humungus (sic) *Fungus* t-shirts are available in their stores, but few people from Crystal Falls have ever seen the humongous fungus or could identify its fruiting bodies. In fact, the picture on their humongous fungus web page (<http://www.crystalfalls.org/humongou.htm>) is clearly a *Leccinum*, a bolete. Yes, I have told them about it, and yes, I offered them the use of one of my pictures of *Armillaria*. I tried.



U-Haul Truck celebrating the Humongous Fungus.

The humongous fungus has been great publicity for the science of Mycology; we couldn't buy publicity like this. The humongous fungus even made David Letterman's Top 10 list. (see www.crystalfalls.org website). U-Haul, known for their truck rental services, got into the act in about 1997, when they contacted me for more information about the humongous fungus. Famous for publicizing some of the more bizarre "roadside attractions" on their trucks, U-Haul planned on putting the humongous fungus on some of their trucks to honor the state of Michigan. Through my web page, they contacted me and asked to use one of my pictures. I consented, hoping to help promote mycology to the masses. A month later they sent me a sample drawing for my approval--and the mushrooms were PINK! I diplomatically pointed out that in fact the mushrooms were not pink and that they should put them on the truck in their natural tan/brown/yellow color, since there were thousands of professional and amateur mycologists throughout North America who would know that their fungi were discolored. The U-Haul people replied back that they had taken some "artistic

license" with the color, since they thought the natural color was not exciting enough. Sheesh. So now there are several hundred U-Haul trucks around the continent with pink *Armillaria* fruiting bodies on them. U-Haul now even has a website about the humongous fungus (Anonymous 2002A). It's exciting for me to see one of my pictures (well, sort of one of my pictures...) on one of the 500 or so Humongous Fungus trucks as I drive down the highway--I've seen the humongous fungus trucks from Maine to California, from Minneapolis to Houston. I like to think it's helping to make the public more aware of fungi and mycology. Myron Smith again wrote: "I like to think that what grabbed the imagination of the public in this case was the idea that there are common, unseen things all around us that are magnificent. Of course, the mental image of a large, old fungus

lumbering over the countryside is also bizarre and wonderful."

The humongous fungus continues to be a great boon for educating non-mycologists on the importance of fungi in their lives. The important publicity generated by the work of Myron Smith, Johann Bruhn, Jim Anderson, and the others that followed continues to speak well for the science of Mycology. Even more humongous fungi will no doubt continue to be found. As mycologists we have a multitude of *Armillaria* researchers to thank for putting mycology in the news in favorable light for a very long period of time. Mycology is not likely to get such great publicity again in our lifetimes. But you never know....

ACKNOWLEDGMENTS: Thanks to Myron Smith, Jim Anderson, Dan Czederpiltz, and Sean Westmoreland for reading the manuscript and making helpful suggestions.

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The Search for Myxomycetes and Protostelids in Puerto Rico

by Ángel M. Nieves-Rivera and Randy G. Darrah

Questions or comments should be sent to Mr Randy G Darrah at the Department of Biology, Fairmont College, Fairmont, West Virginia or Email <randar@mteer.com>. The authors thank Drs Steven L Stephenson and Frederick W Spiegel for assistance and encouragement to write this article.

During the period of November 17 to 21 of 2001, we traveled through different life zones of Puerto Rico collecting leaf litter, soil, and even bat guano to isolate myxomycetes, protostelids, dictyostelids, and fungi (but especially the first two groups). Investigated were a rainforest (LTER El Verde Field Station and Mt. Britton Spur, Luquillo Mountains), two dry forest sites (Guánica Dry Forest and Magueyes Island Field Station), and two humid tropical karst (El Convento Cave-Spring System and Cueva Ventana). Herein, we record our findings of myxomycetes and protostelids.

We met in San Juan on the 17 of November. Drs Steven L. Stephenson, and Frederick "Fred" Spiegel accompanied the authors on the expedition. We began the journey by driving to the Sabana Station in the Luquillo Mountains. A beautiful view of the Luquillo Mountains, usually hidden in the clouds, was observed. Upon reaching the Sabana Station, we encountered a small problem: the locks had been

changed and no key was available. Fortunately, Dr Sharon Cantrell was present at the moment of our arrival and gave us access to the facility. Thanks Sharon!!! We unloaded our equipment and stored it in the USDA Forest Service house. There were several hydrologists from The Netherlands at the Sabana Station at the time of our visit.



Collecting myxomycetes

Quickly depositing our equipment in the dorms and the lab, we proceeded to the LTER El Verde Field Station. Our intention was to make full use of the remaining light of the day. The El Verde Field Station is located at an elevation of approximately 300 to 500 m on the northwestern slope of the Luquillo Mountains in the Luquillo Experimental Forest, northeastern Puerto Rico. The predominant vegetation is a tabonuco forest. Mean annual rainfall at El Verde is 3460 mm and mean annual temperature is 23°C. The life zone of El Verde is classified as a subtropical wet forest (ST-WF). We parked the car at the main road (PR-186), put on our backpacks and began the trek to the field station. Upon arrival, we followed a foot trail to the previous location of the hanging bridge (now gone because of Hurricane Georges) over the Río Sonadora. We made some stops and collected fallen or aerial dead parts of Indian plantain (*Heliconia caribaea*), fronds of the

sierra palm (*Prestoea montana*), and bromeliads (*Bromelia* sp. and *Tillandsia* sp.). Field collections of myxomycetes were relatively uncommon, but a few specimens were secured, including *Hemitrichia serpula* and *Lamproderma arcyriomena* on old palm fronds. As dusk approached, we returned to the lab at Sabana to prepare specimens and organize our plans and equipment for the next day.

The next morning, we proceed on our second foray. The Mt. Britton Spur is at an elevation of about 900 m on the northeastern slope of the Luquillo Mountains. The vegetation at the very highest elevation is a Dwarf, Elfin or Cloud Forest type, which is part of the lower montane rainforest (LM-RF). Data collected from Pico del Este shows that, in general, the lower montane forest has a mean annual rainfall of 4900 mm and a mean annual temperature of 17 to 20 °C. At this elevation, plant species such as *Ocotea spathulata*, *Calyptanthes krugii*, and *Tabebuia rigida* comprise 64 % of the woody stems. The palm forest is also present at Mt. Britton and included such plants such as *Prestoea montana*, *Croton poecilanthus*, *Calycogonium squamulosum*, and *Cordia borinquensis*. Collectively, these three comprise about 93 % of the forest composition. *Trichia favoginea* and *Ceratiomyxa fruticulosa* were among the myxomycete specimens collected at this location. There was a dense mist covering the summit of El Yunque (1065 m of elevation) and the surrounding peaks. Mt. Britton (941 m of elevation) and Yocahú towers provided conditions that were clear enough to take some photographs and digital images.

After several hours of driving, with an occasional break to stretch our legs and



Hemitrichia serpula

to obtain a cool drink, we entered a landscape completely different from the one we had left. Hills of limestone or volcanic rocks, often dominated by cacti, are common in this portion of the island. We had entered the domain of the Guánica Dry Forest. The Guánica Dry



Cave opening to Cueva El Viento.

Forest occurs along the southern coast of Puerto Rico and has a total extent of approximately 4016 ha. The highest elevation is 228 m above sea level. This dry forest has a high diversity of plant species (more than 700), as well as a number of resident endemic and endangered organisms. This forest, which is classified in the subtropical dry life zone (ST-DF), has an average of 860 to 900 mm of rain annually and an annual average temperature of 25.1 °C. The flora of Guánica Dry Forest is similar to that of the xeric Magueyes Island Field Station, including cacti, thorny shrubs, grasses, and mangroves. Recent surveys have been carried out for fungi (VAM mycorrhizae in *Capparis cynophallophora* and *Tabebuia heterophylla*) and myxomycetes in this dry forest. Myxomycetes collected by us from the Guánica Dry Forest were *Badhamia gracilis* and *Physarum pusillum* in fallen or dead aerial parts of “sebucán” (*Cephalocereus royeri*) and Turks head (*Melocactus intortus*).

Our next stop was the Magueyes Island Field Station. This offshore island campus belongs to the Department of Marine Sciences-UPR, and has several teaching/research laboratories and dorms. The station itself is located 300 m off La Parguera in the Lajas municipality, southern Puerto Rico. According to the Holdridge System, it is classified as part

of the subtropical dry forest life zone (ST-DF). The Magueyes Island has a small summit (26 m elevation) from which most of the reefs, mangrove channels, and the nearby town of La Parguera are clearly visible. Mean monthly temperatures range 25 to 31 °C, and annual precipitation ranges from 500 to 1200 mm. Strong trade winds, with speeds of 10 to 25 km/h, are often common from the southeast or east. During the day, it is possible to observe the introduced Cuban Rhinoceros Iguana (*Cyclura nubila nubila*) on the island. We stayed in the Peace Corps dorms of this island for two days. Temperature and humidity were high, but there was a moderate sea breeze kept conditions tolerable. The breeze also helped to prevent the

usually present hordes of mosquitoes from forming. Later that evening, we boarded the small ship “Fondo de Cristal-II” and went out on the well-known Phosphorescent Bay accompanied by “The Flushing.” The bioluminescent dinoflagellate *Pyrodinium bahamense* produced blue-green flashes of light when the water around them was disturbed by the ship’s propellers. Recent tests now show that because of pollution the bay only glows 1/10 of its original strength.

The next morning, was reserved for a caving expedition. Traveling east, first on a primary highway (PR-2) and then deviating to secondary roads, we entered a dirt (actually rather muddy) road that led to the actual cave site. Ángel found it difficult to control the vehicle in the heavy mud. Eventually we reached a point where we could not continue due to the treacherous conditions. Leaving the car in an unsinkable part of the road, we walked about 45 minutes trudging through ankle-deep mud, jumping a fence, transversing a stream, and following a winding cows path through a thorny shrub thicket. We were rewarded by reaching the entrance to the beautiful hidden forest and cave system of the El Convento Cave-Spring System. This system is located in the middle of the Tertiary Juana Díaz Formation at the head of a deep, vertically-walled, karstic gorge known as Quebrada Los Cedros

(Los Cedros Stream), approximately 5 km ENE of Guayanilla, in southern Puerto Rico. The underground sections of the stream, cave, and pond (Charco Azul) can be explored for about 500 m. The Cueva El Viento section is a large and dry upper-level cave with an opening high above the valley floor. The gorge of Quebrada Los Cedros has temperatures of about 6 to 8 °C cooler than found in the surrounding hills, and the relative humidity is 12 to 18 % higher. Annual precipitation is 1270 mm and the mean annual temperature about 25 °C. This deep, vertically-walled gorge and the underlying El Convento Cave-Spring System, both features resulting from karst processes, have resulted in a shaded, cool, moist microclimate with its characteristic flora. A previous mycological survey in Los Cedros gorge and El Convento Cave-Spring System reported *Saprolegnia ferax* and *Achlya americana* from Charco Azul. Our collecting efforts were centered around various types of paired aerial litter samples (including lianas and dead but still attached leaves), which were to be examined for the co-occurrence of myxomycetes and protostelids.

Our final day was spent traveling from La Parguera to San Juan. We passed Mayagüez and entered the road (PR-111) through Moca to Lares, passing close to the Río Camuy Caves Park (PR-129) then going on to Arecibo. Arecibo is the home of the scientific marvel Arecibo Radio Telescope operated by Cornell University and used in the movie "Contact." We traveled among the "mogotes" (residual limestone hills), a typical karstic feature of northern Puerto Rico. We then took the new road (PR-10) from Arecibo to Utuado, and after passing several interesting paleontological sites as well as Cueva Matos and going high above the actual level of Río Grande de Arecibo, we saw the entrance to Cueva Ventana. The entrance was cluttered with heavy machinery busily clearing a site for a fuel station. The irreversible damage to this ecological site is obvious and disheartening. Few people understand or care about such things until it is too late! Cueva Ventana (Window Cave) is



Angel collection bat guano.

part of the Río Abajo Commonwealth Forest in Arecibo. The Río Abajo Forest is located in the humid region (ST-MF) of the northern karstic belt receives an average annual rainfall of about 2006 mm. The mean monthly temperature is 25.5 °C. This cave has an impressive view of Río Grande de Arecibo. Other interesting features of Cueva Ventana and a nearby unnamed cave are Indian petroglyphs, bat and bird populations (and thus fresh guano deposits), and tailless whip scorpions or "guabás." Unfortunately, decades of careless tourism have exacted a toll on Cueva Ventana as well as many other caves in Puerto Rico. Samples collected at this site included those from the cave itself as well as additional samples from the surrounding forest. Some of these samples were to be sent to Dr. John C. Landolt (Shepherd College, West Virginia) for isolation of dictyostelids. Running short on daylight and completing our intended field work, we continued our way to San Juan, where Steve, Fred, and Randy were safely dropped at their hotel. Ángel then returned to Mayagüez that same evening.

This was the latter author's first visit to Puerto Rico, and he was made aware of a few facts that will help when planning his next visit to the island. Among these were: (1) Never cross a main avenue in San Juan at noon. It is risky business! There are lethal-gene drivers

everywhere! (2) There is no sea monster (e.g., giant squid or plesiosaur) living in the Phosphorescent Bay next to La Parguera. (3) One should bring ear plugs to use while waiting to depart on the tour to the Phosphorescent Bay (watch out for loud speakers!). (4) Tree frogs (known as "coquí") are noisy at night, but not poisonous. (5) There is a possible symbiotic relationship between McDonalds, Burger King, and Church's Chicken. (6) "Mofongo" (a typical dish of smashed plantains) is not a tropical disease! (7) Spider legs or "Arañitas" (Spanish for little spiders), another typical dish made with fried plantains, are not prepared by using real spider legs! (8) The masked guys wearing colorful traditional dresses seen in the streets are part of the Festival of Masks (a Catholic festivity known as the Day of the Saint Innocents) and not Puerto Rican super heroes! (9) The speed limit on most roads throughout the country is usually 45 to 65 mph., but most people drive at something approaching light speed! (10) The Moon is not the only place to see craters, since they are quite common in the roads of Puerto Rico!



Randy, Steve and Fred.

From the President's Corner

Dear Friends and Colleagues,

Well things are shaping up nicely for our annual meeting this year in Corvallis. **Keith Egger** (Chair) and the Program Committee Members (**Susan Kaminskyj**, **Jessie Micales**, and **D. Jean Lodge**) have been working steadily to put together a series of interesting symposia and arranging the program to provide all of us with an enjoyable experience. I think you will find these symposia intellectually stimulating as they cover a wide variety of topics: Molecular Plant-Fungal Interactions (**L. Ciuffetti**, Organizer); Invasive and Emerging Fungal Diseases (**David Rizzo**, Organizer); Morphogenesis, Secretion and Polar Growth (**Brian Shaw**, Organizer); Advances in Molecular Ecology (**Tom Bruns**, Organizer); and a special Festschrift in honor of **Jim Trappe** (**Tom O'dell**, Organizer).

Stephen Peterson (Past Chair) and the members of the Karling Annual Lecture Committee (**David Geisser**, current Chair, **David Hibbett** and **David McLaughlin**) have arranged a delightful speaker and topic for this year's lecture, you will not want to miss this presentation. The annual **Karling Lecture** will be delivered by **S. Blair Hedges**, on "*Precambrian Fungi and their Possible Impact on the Earth and its Biosphere.*" All of this combined with the typical high quality of our contributed talks and posters promises for a rewarding professional experience. **Joey Spatafora** and **Jeff Stone** (local arrangements), along with **Anki Camacho** and **Don Ruch** (local foray arrangements) and many others, have also been working hard to provide us with a meeting we will long remember.

We can look forward to several interesting, atypical annual meetings over the next three years. In 2003 we will be meeting at the Asilomar Conference Center in Pacific Grove, California in a joint meeting with the British Mycological Society, our first ever "stand alone" joint meeting with our friends and colleagues from over the Atlantic. **Linda Kohn**, **Orson Miller** and **John Taylor** were instrumental in helping to arrange this meeting with the BMS. In 2004 we will be meeting in Asheville, North Carolina, with the North American Mycological Association, another first. **Larry Grand**, **Rytas Vilgalys**, **Dennis Drehmel** and **D. Jean Lodge** have been doing the background work for that meeting. And then in 2005, we will be holding a joint meeting in Hawaii with the Mycological Society of Japan, also another first! **Orson Miller**, **Maren Klich**, **Dennis Desjardin**, **Don Hemmes** and **David Hibbett** have been involved with helping to arrange this venue. Each of these upcoming meetings will be special in their own way and not to be missed. Our meetings are such an important part of our Society's interpersonal interactions, it is important to have as many members attend as possible.

I hope you have all had the occasion to use our newly revamped web site <www.msafung.org>. **Roy Halling** is to be



Tim Baroni, President, MSA

congratulated for this new look and feel as he has taken over the job of MSA Web Master from Tom Volk. Tom needed to get on with other aspects of his professional career and thus asked to be replaced as Web Master this past fall. As pointed out by **Don Ruch** in the last *INOCULUM*, Tom deserves our heartfelt thanks for setting up our original site and for running that important information source for the MSA for the past several years. I was very pleased when Roy accepted my offer to take over this post. Roy's "facelift" of the entire site looks great and he has made it even more user friendly than before. When one takes some time and cruises around through the MSA pages, it is obvious that Roy has done a lot so far to enhance the presentation of the information and its accessibility. If you are a user of this site and like what you see, please take a moment to thank Roy for volunteering his time and for doing such a professional, pleasing remake of the MSA web site.

Mycologia will be online shortly. We had originally predicted January as the launch date, but it will actually be in March, or April at the latest. I think after everyone has had some time to use the online information provided in this format, most if not everyone of our members will be very pleased with this step into the future for our journal. **Jim Ginns**, **Orson Miller** and **John Taylor** have been working hard on getting the agreement set up with HighWire Press. I and **Jim Ginns** (Managing Editor of *Mycologia*) signed the Letter of Agreement with HighWire Press this past January. A recent teleconference among the members of HighWire Press, Allen Press and **Jim Ginns**, **Joan Bennett** (Editor-in-Chief of *Mycologia*) and **John Taylor** about the Digital Input Guidelines administered by HighWire Press should have been the last step before our journal finds its way into cyberspace. *Mycologia* will finally be joining the growing numbers of journals that are now being accessed electronically. Obtaining information, especially from those journals that are on line, will only become easier and

more convenient in coming years. Making this move into the online arena with *Mycologia* is an important decision for the continued growth and health of our Society and its journal.

The sudden passing of **Stephen T. Moss**, President of the British Mycological Society, this past October was very upsetting. After having corresponded with Stephen on several occasions about IMC7, I was looking forward to meeting him this summer in Oslo. I sent a brief note of condolence from our Society to be read at his funeral ceremony, but it seemed so inadequate. I hope our members who knew Stephen and his family personally took the time to send a sympathy card to his wife **Jan Moss** (see the last issue of *INOCULUM*, p. 7 AND thank you **Meredith Blackwell** for providing us with the necessary information).

The opportunity arose this past fall for me to nominate a mycologist to sit on the Invasive Species Advisory Committee (ISAC) for the U. S. Department of the Interior. **Linda Kohn** had nominated **Jeff Stone** for this important position a few years ago, but Jeff was not selected. With Linda and Jeff's help, I nominated Jeff again for this post, but we are still waiting to learn if Jeff has been selected this time. As pointed out previously by Linda, the ISAC provides advice to the Invasive Species Council on issues related to preventing the introduction of invasive species and providing information on controlling and/or minimizing the impacts that invasive species have once introduced into an ecosystem. The ISAC, which consists of only 25 members, can have significant influence on policy making in this area as the Council is Co-

chaired by the Secretary of the Interior, the Secretary of Agriculture and the Secretary of Commerce. It would be good for the MSA if Jeff is selected to serve on that committee this time around.

We all have a busy and hopefully productive year in front of us, as I suspect many of you will be attending one, two or more meetings this summer. I hope to see most of you in Corvallis for our annual meetings, and perhaps I will see a good number of our membership at the Latin American Mycological Congress IV in Xalapa, Mexico and/or at the International Mycological Congress 7 in Oslo, Norway. Wherever your travels take you this summer, I hope they are safe, calm and thoroughly enjoyable.

-- **Timothy J. Baroni**
President (2001-2002)

Mycological Society of America

Midyear Reports (covering the period August 25 -- February 20, 2002)

Secretary's Report

From August 25, 2001, to February 20, 2002, the Secretary

- Sent the 2001 General Council and Annual Business meeting minutes to Council for approval before sending them to Editor Don Ruch for publication in *Inoculum*.

- In early September welcomed newly elected officers and councilors and sent them copies of the 2001 annual reports, a complete working roster incorporating all Society appointments (including previously omitted *Mycologia* related appointments), Society constitution and bylaws, and copies of the unrevised Manual of Operations (MOP) to serve as temporary guidelines until President Baroni finished his final MOP revisions. Consulted with Editor-in-Chief regarding streamlining *Mycologia* Editorial Board matters and alerted other committee chairs about early deadlines necessitated by the June 2002 MSA meeting. Worked with President Baroni to develop an updated Roster with current electronic address

information for all past and newly-elected/appointed Councilors, committee members, and Society representatives. Also developed and periodically up-dated Email batch lists for sending timely announcements or requests to MSA volunteers and members.

- In mid-September Emailed welcome (or welcome back) letters to all Councilors, committee appointees, and representatives and sent copies of the Constitution/Bylaws, 2001-2002 Society Calendar, 2001 committee reports, Full Society roster, pertinent guidelines from the Manual of Procedure (MOP) to officers, Councilors, Committee Chairs, and Representatives. Sent revised and completed Society Roster to Editor Don Ruch for publication in *Inoculum*.

- Polled Council via Email on seven concerns and submitted final Council decisions to Editor Don Ruch for publication in *Inoculum*. (See 52(6) and 53(1) for details).

- Responded to requests for MSA membership information, redirected mycological and procedural questions to

the appropriate experts, and addressed miscellaneous membership concerns. Communication with officers and Society members is ongoing, with most Society business transacted via Email (preferred). From September 1, 2001 – February 20, 2002, the Secretary received or sent electronically 1,012 messages.)

- Requested that Allen Marketing and Management (AMM) Association Manager, Linda Hardwick <lhardwick@allenpress.com> forward all requests for Emeritus status to the Secretary for confirmation and future correspondence when questions arise.

- Compiled new member and emeritus candidate lists supplied monthly by Linda Hardwick for publication in each issue of *Inoculum*. There was an unavoidable delay in welcoming new members who joined at the Salt Lake meeting, caused by the APS processing lag time. The Society at large will vote to approve new and Emeritus members during the Annual Business meeting to be held in June 2002, in Corvallis, Oregon. From August 2001 through January 2002, 80 new members petitioned

MSA BUSINESS -- Midyear Reports concl'd

to join the Society and six members (DG Ahearn, Ralph Kurtzman, David L Largent, Anthony Liberta, Larry Don Robertson, and Ian Ross) requested Emeritus status.

- Received with sadness notice of death of former MSA President, Weston Teaching Awardee, and MSA Distinguished Mycologist, Dr Clark Rogerson (1918-2001). He will be missed, and his generosity will long outlive him.

- In early February sent requests for agenda items/progress reports to Council members and Society committee chairs and representatives for the midyear Executive Council meeting.

- In consultation with President Baroni, assembled the mid-year agenda, which was sent to Executive Council members with mid-year reports in time for the February 23, 2002, MSA Executive Council Meeting.

Respectfully submitted,
-- Lorelei L Norvell
Secretary
Mycological Society of America

Program Committee's Report

MSA Annual Meeting Update: Corvallis, Oregon, June 23 to 26, 2002.

Plans for the MSA Annual Meeting at Oregon State University are well underway. Following are key dates:

Council Meeting: **June 22.**

Foray: **June 23.**

Contributed Symposia and Sessions:
June 24-26.

Deep Hypha Workshop: **June 27.**

The annual **Karling Lecture** will be delivered by S. Blair Hedges, who will speak on the topic "*Precambrian Fungi and their Possible Impact on the Earth and its Biosphere.*"

The **Symposium** line-up includes the following: "*Advances in Molecular Ecology*" (T. Bruns, Organizer), "*Molecular Plant-Fungal Interactions*" (L. Ciuffetti, Organizer), "*Invasive and Emerging Fungal Diseases*" (D. Rizzo, Organizer), and "*Secretion, Polar Growth, and Morphogenesis*" (B. Shaw, Organizer).

Social events are in the planning stage, as are accommodation and registration details. A conference web site will be up soon. Watch the MSA web page (<http://www.erin.utoronto.ca/~w3msa/>) for links to the conference site.

The **foray** will have a new flavour this year, with the inclusion of lichenologists. In addition to the usual search for interesting non-lichenized fungi, we are pleased that **Bruce McCune** has agreed to lead a lichen-oriented foray group. This is a great opportunity for lichenologists to attend our meeting and for mycologists to get to know the lichens (and the lichenologists) better! Additional foray details were published in the most recent *Inoculum* (see the MSA web page for an electronic version).

Electronic abstract submission is underway (<http://www.erin.utoronto.ca/~janderso/msa/>), with a due date of March 1st. Keep watching *Inoculum* for further information.

-- Keith Egger, Chair
Program Committee

Wanted! Wanted! Qualified Reviewers for *Mycologia*!

***Mycologia* is thriving, averaging more than one new submission every working day. Because each manuscript receives at least two peer reviews, we are constantly asking our membership to donate their time and expertise to review new papers. Some of our best reviewers are carrying a heavy workload. Therefore, we are asking for volunteers. If you have never been a reviewer for *Mycologia*, or if you haven't been a reviewer in recent years, we would like to hear from you. Please send the Editor-in-Chief your name and contact information, and a brief description of your area of expertise. We are particularly in need of reviewers who can handle papers on myxomycetes, ascomycete phylogeny, and on medical mycology, but reviewers in any field are welcome.**

Thank you! We look forward to hearing from you!

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MSA Secretary Email Express

There were no Email Council Polls conducted during January or February, as most issues were being held for consideration by the Executive Council during its annual mid-year meeting on February 24, 2002.

Emeritus membership status is conferred upon long-time members who have retired and have been MSA members in good standing for at least 15 years. We did not begin announcing new Emeritus members in *Inoculum* until this year, but we would like to take this opportunity to acknowledge **Anthony Liberta** and **Ian Ross**, who applied for Emeritus standing during 2001.

Welcome, New Members! Although candidates for MSA membership cannot vote until formally approved at the annual general business meeting, they do receive *Mycologia* and *Inoculum* immediately after Allen Press processes their applications. During December and January, the following 21

people applied for MSA first-time membership: **Bonnie Alexander, Irene Barnes, Louis Battaglia, V Brown, Guo Liang Dong, Jozsef Geml, Bruce Ing, Antonio Izzo, Jackson N Kungu, Nelson Lima, Maria Cristina Lopes, Ana Esperanza Franco Molano, Kurt Reinhart, Isabel Machado Dos Santos, Nicholas B Simpson, Isshin Tanaka, SMMP Verheesen, Luis Villarreal-Ruiz, Michael Wood, Chunfa Wu,** and



Lorelei Norvell, MSA Secretary

Kequin Zhang, Karin Jacobs is a new life member. Welcome back also to former member **Eric Swann**, who also rejoined MSA during that time.

-- Lorelei Norvell
MSA Secretary

2002 MSA Foray

The **2002 MSA Foray** will occur on **Sunday, June 23, 2002**. The foray registration fee is **\$30 per participant**. There has been a last minute change concerning the site of this year's foray in an effort to keep all participants together. Additionally, the site selected for the foray is in the Cascades and is a considerable distances from Oregon State University. Participants should expect a lengthy bus ride of one and a half to one and three-fourth hours. For this reason, buses will depart for the foray site at precisely 8:00 am pacific time. The site selected for the foray is **Iron Mountain**. At Iron Mountain participants could hike to the top of the mountain (an all day affair) or look around the woods. The site is excellent for Spring flowers and mushrooms. If time permits, some participants may go to nearby Hackleman Creek for an afternoon collecting session. Here is a

tentative itinerary for the foray:

7:30 am Assemble at the Alumni Center at OSU
8:00 am (sharp) Depart Alumni Center
9:30-10:00 am Arrive at Iron Mountain
10:15-10:30 am Group photo
10:30 am-12:00 pm foray at Iron Mountain
12:00-1:00 pm Lunch
1:00-2:15 am Afternoon foray at Iron Mountain or possibly Hackleman Creek
2:30 pm Depart for Alumni Center OSU
4:00-4:30 pm Arrive at Alumni Center
6:00 pm Salmon bake

There will be a post foray room (details in a later issue). For more information about Iron Mountain, contact their website at http://www.sweet-home.or.us/forest/sh_ranger_district/IrMt.html.

-- Donald Ruch
Foray Coordinator
druch@bsu.edu

ITEMS NEEDED FOR MSA AUCTION IN CORVALLIS !!

The annual MSA meeting in Corvallis is coming up fast so start thinking of a few strange and wonderful mycological items you could bring to make the social and auction a merry and profitable time. Remember, all funds go to help young students attend mycological meetings. Old and rare books, mushroom artifacts, mushroom photos and slides are all highly valued by our clientele. Sometimes the sillier the item, the more it brings. Old mushroom ties and the like are highly sought after. Please bring items to Corvallis and contact Don Hemmes, auction coordinator, or leave them at the MSA booth and he will pick them up.

-- Don Hemmes
hemmes@hawaii.edu

The Editor's Corner ...

At this time of year, everyone, if not already so, is beginning to running "out of gas." The obvious result is that our quality of our work begins to sag of bit. So to help raise your spirits, I would like to offer this piece on quality. (*Remember, I work with coprophilous zygomycetes.*) "**Quality** is like buying oats, if you want nice clean, fresh oats, you must pay a fair price. However, if you can be satisfied with oats that have already been through the horse, **that comes a little cheaper.**" -- *Anonomous*

The deadline for the next next issue of Inoculum [53(3)] is Monday, April 15, 2002.

-- Donald G. Ruch

Have you Visited the MSA Bulletin Board Recently?

The current MSA bulletin board has been in use for about 1-1/2 years. Two hundred twelve messages have been posted – half of these advertising positions available. Other bulletin board categories and the number of posting are: calendar (17), current news (18), goods and services available (9), information wanted (28), and help and items wanted (34). I would like to encourage submissions in all categories, especially calendar items. Please contact me if you think the bulletin board categories should be changed.

The bulletin board is moderated in that the editor reviews all incoming messages and approves them for display. The software application automatically removes items when they expire.

New items are submitted through a form on the bulletin board site. The submitter can check a box on the form and the posting will be sent to editor for *Inoculum* as well. Unfortunately, that feature has not worked well up to now, but the problem has been fixed.

Visit the MSA bulletin board by following the link on the MSA home page

<http://msafungi.org/>

For a quick look at current messages, check the ‘view all’ and the ‘titles only’ boxes. The title and submission date for each item is shown, arranged chronologically within each category. One click brings up the full text of an item. Users may elect to review notification by e-mail when new items are added.

-- *Ellen Farr*

MSA Bulletin Board Editor

MYCOLOGICAL NEWS

Luella K. Weresub Award for Students of Mycology

Applications for the 2002 Luella K. Weresub Award are now being accepted. If you are a mycologically oriented undergraduate or a graduate student, or if you supervise or know someone who may be eligible for the award, please read this announcement carefully. This annual award of \$1,000 (CAN) was established to honour the memory of Luella K. Weresub, a Canadian mycologist whose lifelong love of people, ideas, fungi and the English language made an indelible impression on all who knew her. The award is intended to further some of the things she cared about: young people, mycological research, and excellence in the use of language.

Eligibility: All students now working with fungi at Canadian Universities are eligible, as are Canadian students at Universities abroad. Appropriate research topics include: fungal taxonomy,

ecology, physiology, biochemistry and genetics, forest pathology, medical mycology, fungal biotechnology, and perhaps others.

Conditions: The award will be given for the **best mycological paper published in 2001/2002**. The judging committee will take into account originality, scientific significance, presentation and the use of language. The decision of the committee will be final. Although it may be preferable that the student be the sole author of the paper, joint papers will be considered, if they are accompanied by a statement on University letterhead, signed by the authors, estimating the percentage responsibility of each author for: (1) the ideas that led to the initiation of the project; (2) the actual “hands-on” research; (3) the writing of the manuscript. **All applications should be submitted by the student’s supervisor,**

and should include **FIVE** copies of each of the following: (a) the actual publication (only one submission per applicant); (b) the candidate’s curriculum vitae; (c) a statement indicating that the student is currently enrolled in a degree program, or completed such a program during the calendar year for which the award is to be made; and, (d) a statement from the supervisor, the student, and any co-authors, establishing responsibility for the paper as outlined above. Please note that the paper must be **published**, preprints and galley proofs are not accepted.

Address and Deadline for Submission: Applications and supporting documents should be sent before March 31, 2001 to: **James B. Anderson, Department of Botany, Erindale Campus, University of Toronto, Mississauga, Ontario L5L 1C6 CANADA (905.828.5362; FAX 905-828-3792; email janderso@utm.utoronto.ca).**

MYCOLOGICAL NEWS *con't*

(Weresub Award *con't*)

Judging Committee: The Committee will consist of Drs. Bryce Kendrick, Dave Malloch, Randy Currah, Scott Redhead, and Jim Anderson. The Committee reserves the right to make no award if submissions are not considered to be of sufficiently high quality, or to share the award between two applicants if their papers appear to be of equal

merit. The winner will be notified by the end of May 2002, and the award will be presented during the Annual Meeting of the Canadian Botanical Association to be held jointly with the Botanical Society of America Aug. 3-8, 2002 in Madison, WI, USA.

The Treasurer of the C.B.A., Dr. Geraldine Allen, Department of Biology,

University of Victoria, Victoria, BC, V8W 3N5 (gallen@uvic.ca), will be pleased to accept donations (which are tax-deductible) to the fund which finances this award. Please publicize the award as widely as possible, and **please contribute to the capital fund if you can afford to do so.**

-- Jim Anderson

janderso@utm.utoronto.ca

“The REAL Find of the Century”!

Without in any way wishing to detract from the interesting observations and detective work that demonstrated that *Pseudotulostoma* is apparently an interesting new ascomycete, I really must take exception to the headline “the find of the century?” contained in the last issue of *Inoculum* (53 (1) Feb 2002). I think that all mycologists would agree that the cumulative weight of evidence strongly places the chytrids among the fungi. In this case the remarkable recognition of the chytrids from the rumen and other gut locations of herbivores, originally made by Colin Orpin in the 1970s, must surely rank higher. *Pseudotulostoma* occurs in typical fungal habitat and does not really look that much different from many other fungal species. In contrast, the gut chytrids occur in a hitherto totally unpredicted habitat, they are obligate anaerobes, a heresy among fungi and, the final surprise, many possess multiple flagella on their motile cells, which was totally contrary to

years of confident definitions bordering on dogma. Subsequent work has demonstrated many other unusual features that do not need to be dealt with here, but collectively they identify a group of organisms that are very clearly far out of the previously known mainstream of fungi. The recognition of these organisms as *bona fide* fungi was surely at least as amazing as the discovery of *Pseudotulostoma*. However, sadly, many mycologists prefer to ignore the chytrids, especially the gut inhabitants, and so they get short changed again! They are cute and friendly little things that probably do humanity much service while living in, to us, the rather unpleasant environment of the gut of a cow. They deserve better recognition, and certainly merit consideration in the race to be “find of the century”! Coming from where the sun does not shine, they deserve more time in the spotlight! Let’s hear it for *Neocallimastix* and its buddies!!!

-- Brent Heath, PhD

brent@yorku.ca

NAMA Annual Foray October 10 - 13, 2002

The 2002 NAMA annual foray will be held at Diamond Lake, OR adjacent to Crater Lake National Park. Events are being planned to include tours of the Park which is celebrating its 100th anniversary this year. Dr. **James Trappe** will be Foray Mycologist, and some emphasis will be on “Hidden Treasures at Your Feet”, meaning the many hypogeous fungi which abound in Oregon. For more information: <namyco.org>, or **Phyllis Cole**, President, NAMA, <yamacole@cruzio.com>.

-- Judy Roger

Program Chair for the Foray

Mid-Atlantic States Mycology Conference (MASMC) April 20-21, 2002

Hosted by the Systematic Botany and Mycology Laboratory Agricultural Research Service, USDA. This year’s conference will be held at the US National Fungus Collections (BPI) in Beltsville, Maryland, outside of Washington, DC, on April 20-21, 2002. Following an informal Friday evening gathering, the meeting includes one day of paper and poster presentations and a banquet dinner with guest speaker, Dr. **Jean Lodge**, USDA-Forest Service, Puerto Rico. Her talk is entitled “In Search of Biogeographic and Evolutionary Roots Among Neotropical Fungi.” She promises to include many photos of beautiful tropical fungi. Sunday is reserved for a morning collecting trip at Patuxent Wildlife Refuge near Beltsville. This is a great chance to get a small dose of the latest research and meet with mycologists. For additional details, registration, lodging information and directions visit the MASMC web site <<http://nt.ars-grin.gov/masmc/>>.

-- Erin McCray

Erin@nt.ars-grin.gov



IMC7: Excited Anticipation Towards August in Oslo

The IMC7 Organizing Committee has the pleasure to inform you that our planning and organization is on schedule and developing nicely. We have had over 1500 request for the Second Circular from people in over 100 countries, more than the Winter Olympics! We are also receiving a high number of paid registrations for this early stage, and new participants are registering at an increasing rate daily.

Presently, the Scientific Committee has 23 Congress and 40 Contributed Symposia confirmed. Thus, the Scientific Program has succeeded in covering an exciting, wide range of theoretical research and practical aspects of mycology within the 5 main congress themes as aspired. By reviewing our continually updated Scientific Program on our website <http://www.uio.no/conferences/imc7/>, you will find that the stimulating list of lectures are to be held by a number of our renowned and well known colleagues, as well as many newcomers. The elec-tronic abstract submission system has also been working well, and similar to paid registrations, we are receiving abstracts submissions at an increasing rate daily. In addition to the lectures, we aim to have up towards 1000 poster presentations.

The IMC7 Pre- and Post Congress Forays are filling up, so please keep in mind the first come first serve restriction on these and register as soon as possible. A more complete description of these than that found in the Second Circular can also be found on the IMC7 website. The diversity of these foray locations represents the entire spectrum of Scandinavian landscapes and ecological habitats, as well as the social benefits of actively learning in the outdoors with colleagues from around the world. The prices also make these worth your while.

Many details of the Social Program have been finalized; including enter-

tainment at the Opening Ceremony and Congress dinner, an excellent and cultural menu for the Congress Dinner, and the daily relief headquarters, i.e. "The Beer Tent", open for all congress participants all day all week. We are also excited about the number of guest expected for the "Wines of the World" evening indicated by those already registered. These represent a diverse number of countries and we could be in for more than our share of refreshing wine tasting. The Closing Ceremony is also developing into quite an event. We expect many awards and announcements to be given by other organizations, as well as our own IMC7 Student awards for best student lecture and a number of student poster awards. The winners of the wine tasting evening will also be announced during the Closing Ceremony. The social events are also on a first come first serve basis, so please register early to assure your place.

Professional and more popular exhibitions are already preparing their respective articles, such as mushrooms

and fungi for the large mushroom exhibition. We all hope for an early spring and mushroom season, as well as beautiful weather in August, of course. Two of Norway's well-known nature painters have also prepared post cards and paintings with mycological motifs to be exhibited and sold during the week, together with international mycological stamp collections, mushroom dying, and historical Norwegian mycologist exhibitions. We have also completed the design for and ordered a good number of congress articles to be provided and sold to participants during the week. These include the congress bag, T-shirts, cap, coffee mugs, thermos, and umbrella. Pictures of these, except the congress bag that we would like to keep secret until participants arrive, will be made available on the IMC7 website as soon as they arrive.

Finally, we would like to wish those of you preparing presentations good luck, and we look very much forward to hosting you and as many of our



Here stands Prof. Leif Ryvarden (IMC7 chair; to the left), Jonathan Colman (IMC7 Project leader and Congress Secretariat, back), Trude Vrålstad (in front), and Trond Schumacher (IMC7 vice chair; to the right) in front of an IMC7 exhibition in the library of the Biology Inst., University of Oslo. This provides a glimpse at some of the exciting IMC7 articles available for sale upon your arrival.

MYCOLOGICAL NEWS *concl'd*

(IMC7 con't)

expansive international network of mycologist around the globe to IMC7 in Oslo Norway this August. When booking your flights, please keep in mind the Congress Airline, SAS, which is

offering a special fair for IMC7 participants. Importantly, the Organizing Committee and our technical organizers, PLUS convention, will always be available for questions or needs that may

arise, so please feel free to contact us immediately.

Yours,
The Organizing Committee
IMC7

THE MYCOLOGIST'S BOOKSHELF

In this issue we review Dictyostelium: Evolution, Cell Biology, and the Development of Multicellularity by RH Kessin and A Laboratory Guide to Common Penicillium species, 3rd edition by JI Pitt, feature books received from December 2001 through February 2002, and list previously featured books received since October 2001. Reviews are needed for several books if you have the time over the next several months. Please check the list, send me an Email at YZJOZ@TTACS.TTU.EDU and I will try to accommodate your request as soon as possible. Please keep in mind that books are listed even though they may have been obtained from the publisher.

John Zak, BOOK REVIEW EDITOR

REVIEWS

DICTYOSTELIUM: EVOLUTION, Cell Biology, and Development of Multicellularity (Developmental and Cell Biology Series # 38). 2001. RH Kessin with a bibliography by J Franke. Cambridge University Press, The Edinburgh Building, Cambridge, CB2 2RU, UK. www.cup.org, 294pp. Price: \$90.00 US.

Each of the major model organisms has its own story of how it reached its exalted status. For the cellular slime mold *Dictyostelium discoideum*, the path to the top was paved by its exemplary chroniclers. You can still turn to Bonner's *The Cellular Slime Molds*, 2nd edition (Princeton, 1967), Olive's *The Mycetozoans* (Academic Press, 1975), Loomis' *Dictyostelium discoideum: A developmental system* (Academic Press, 1975), and Raper's *The Dictyostelids* (Princeton, 1984) for information and inspiration. These were (and remain) outstanding introductions for students and other newcomers to the organism. They contributed to *Dictyostelium's* special status by demonstrating how it and its relatives are ideally suited to address problems of general biological interest. Each reflects the author's unique perspective, adding to the interest and value of the books. No monographs have appeared in the long years since, perhaps not least because of the explosion in the *Dictyostelium* literature (there were 961 papers by 1975 and over 6000 since then). In the meantime, there have been several useful multi-authored volumes. However, these by their very nature lack the timelessness and insights of the classic monographs. Thanks to Professor Richard Kessin of Columbia University, the monograph has returned to the world of *Dictyostelium* biology as the latest volume in the Developmental and Cell Biology Series of Cambridge University Press.

Kessin's book is similar to Loomis' in its focus on *Dictyostelium discoideum* and its wealth of experimental detail, but it is also in the tradition of Bonner's in expanding its view to evolutionary and ecological relationships. It is written in a style that makes it an easy and enjoyable read. It can be read profitably by experts and novices, faculty, postdocs, and students, both graduate and undergraduate.

The book can be considered to have two distinct parts. The first quarter of the book provides historical, evolutionary, and ecological context. The star of this section is Chapter 4, an excellent overview of the genome and genetics, including discussions of the powerful molecular genetic tools that have made it so useful in recent years and of the pitfalls of molecular biology with *Dictyostelium* that can be so frustrating to the uninitiated. The other beginning chapters are less successful. Chapter 1 proposes to introduce *D. discoideum* and its relatives. After reading the chapter, the reader will know *Dictyostelium*, but still find the relatives to be strangers. The most comprehensive work on the broader group (Olive's *The Mycetozoans*) is not cited (although it is included in the list of resources at the end of the book). Raper's book is cited as a reference for the classification of these organisms, but he ignored the generally accepted movement of the Mycetozoa to the Protista and the splitting off of the acrasid from the dictyostelid cellular slime molds, so the reader is being guided to the wrong source. The now well-established grouping of *Acrasis* and *Pocheina* with non-fruiting soil amoebae is not noted. There are some mistakes here-not all of these relatives are soil inhabitants (in fact, very few of them are), not all aggregative eukaryotic microorganisms have amoeboid trophic form, and, in fact, much is known about the details of their development, at least at the ultrastructural level.

Chapter 2 provides a history of research on *D. discoideum*. I admire the spirit of this chapter. A student focused on cloned genes for the components of a signaling pathway needs to be reminded of the living organism and that there are real people behind those literature citations. The classic experiments of Raper and Bonner always make nice stories. However, the chapter sometimes reads like a laundry list, especially towards the end.

Chapter 3 concerns the evolutionary biology of *Dictyostelium*. It continues the tradition of the other monographs in emphasizing that there are serious biological problems that can be addressed with *Dictyostelium* in fields

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outside its usual sphere of influence, such as ecology and evolutionary biology (see Strassmann *et al.*, 2000, *Nature* 408: 965-967 for an example). The main quibbles here are that there has been significantly more pondering on the evolution of multicellularity in the cellular slime molds and on their potential relatives than would appear to be the case from reading this chapter. And, the mistake is made once again of citing Raper's book for the larger-scale classification of the slime molds. Raper stood alone in continuing to consider slime molds as primitive fungi in his 1984 monograph. It did not take molecular phylogeny to understand that this was not the case! Also, it was Olive, not Raper (as stated on p. 37) who proposed the common origin of protostelids, dictyostelids, and myxogastrids (plasmodial slime molds).

The remaining three-quarters of the book is focused on the glorious details of cell and developmental biology, and it is an exciting and inspirational read. The chapters are organized by life cycle stage, which generally works, although it makes the discussion of pattern formation a bit fractured. I fear students will find the fascinating story of the subpopulations of prestalk cells a bit hard to follow in its complete developmental context given that it is spread across three chapters. The author makes good use of rhetorical questions to drive the narrative, helping to maintain interest and serving to guide the reader through the more complicated sections. The coverage is impressively well-balanced and comprehensive. Competing models receive fair coverage and the missing data necessary to settle the question are discussed. The copious illustrations (including a central section of color figures) complement the text and are, for the most part, well-reproduced. Some, however, are poor, showing signs of being scanned from low resolution images (e.g., Figs. 10.2, 10.4, 10.6, and 11.9). The author is effective in pointing out the relationship of the newest discoveries to the classic questions raised in the beginning of the book. And, in the grand tradition of the other monographs, broader biological questions are raised. A student reading

these chapters will not only learn the state of the knowledge and the direction of the field, but will be inspired by the numerous questions that are raised.

The book concludes with a "Resources" chapter that provides a commentated bibliography of books, articles for non-scientists (however, it is stated that "several" articles useful for the non-scientist have been published, but only two are referenced), films and videos, and websites. A list of 1,000 references follows and occupies 61 of the book's 294 pages. The bibliography was prepared by Jakob Franke. The resource chapter alerts the reader to the existence of his full and readily downloadable *Dictyostelium* literature database (another of the organism's critical success factors). There is an excellent index. The overall production and proof-reading are of high standard.

In conclusion, this book succeeds at a variety of levels. It should be in the personal libraries of all *Dictyostelium* workers and should be obtained for most institution's libraries. Leave a copy or two in your lab, as I have, so your students and postdocs will appreciate that *Dictyostelium* is an organism, see the context of their work, and find new avenues of exploration. Will it be a classic? Only time will tell, of course, but it does have the hallmarks: comprehensiveness, balance, perspective, and general biological context. *Dictyostelium* has, once again, been well-served by a chronicler.

-- **Richard L. Blanton**

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A **LABORATORY GUIDE to Common *Penicillium* Species**, 3rd edition. 2000. JI Pitt. Food Sciences Australia, North Ryde NSW, 1670 Australia. 197 pp. Price: \$65 US air mail.

I am no expert on *Penicillium* identification, and my connection to it is mostly in trying to help unhappy students identify isolates for their class culture collections. Frankly, I approach the task with only slightly less trepidation than

my students. Pitt's concise identification guide is intended to make this tough job possible, if not a lot easier. This manual contains short descriptions of the most commonly encountered *Penicillium* species, devoting one page of text and one page of photographs to each. This is a third edition, and is slightly expanded in comparison to the first two versions. I will start off by saying that any practicing mycologist should have some edition of this manual. This third edition is not very different from the first two, so I cannot say that everyone needs to throw out their old version and buy it. But chances are your older edition is either threadbare, or as in my case, missing, and it is time for a replacement. In fact, anyone teaching a course that involves identification of fungi isolated from the environment could use two or three copies. Unfortunately, it is not cheap, at \$65.00 US. A set of color standard patches may be provided with the manual soon, which will be a significant improvement. Attempts to find an inexpensive used copy of an older version will probably be futile; my search of the web uncovered a used version of the second edition at \$75.00, and nothing else! Perhaps this is the best testament of all to the usefulness of the book. The manual is printed on high quality paper, and older, similarly bound editions of Pitt's guides have held up very well.

The manual is organized into seven sections. First is an excellent, extensive introduction to the history and methodology of *Penicillium* identification. This section is very clearly presented, and contains detailed descriptions of the methods required to use the book effectively. This is a necessity because Pitt's system requires the use of standardized media, usually Czapek Yeast Extract Agar (CYA), Malt Extract Agar (MEA), and 25% Glycerol Nitrate Agar (G25N), which is a bit of an inconvenience. However, standardized media have proven quite effective as aids for *Penicillium* identification, as they have for other genera, so this is simply something one has to accept. The

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author might not agree, but the book can be used fairly effectively to identify penicillia grown on other media, or at least on only one or two of those recommended, particularly if reference cultures are available. Other very useful and proven methods described in the book include how to make a good wet mount of *Penicillium*, an absolute necessity, and how to make clean colony inoculations with no strays. The introduction also contains a concise description of the relevant macro- and micromorphological characters, and a key to the six teleomorph genera and anamorph subgenera treated, which form the organization of the remaining six chapters. Although they may be inter-related, those species with known teleomorphs (either *Eupenicillium* or *Talaromyces*) are treated separately from those known only as *Penicillium* anamorphs, but there is a clear connection between the teleomorph genera and anamorph subgenera (*Talaromyces* teleomorphs are always associated with subgenus *Biverticillium*-type anamorphs).

Each of the chapters corresponding to subgenera and teleomorph genera consists of two-page descriptions of each species. The total of 82 species is meant to represent the most commonly encountered and important species of the 240 or so currently recognized. Each chapter starts with either a dichotomous key, or in the case of the teleomorph genera, a synoptic key. The *Eupenicillium* key is combined with a key to sclerotigenic species; since cleistothecia and sclerotia are almost certainly homologous in *Penicillium*, this makes sense.

Each species description consists of one page of text, with a detailed two paragraph description of macromorphological and micromorphological characters, followed by a list of distinctive features. The distinctive features sections are particularly useful since they provide information regarding taxonomic history, similar species, mycotoxins, and substrates from species are

commonly isolated. The figures are very well-produced, consisting of photographs of colonies on the relevant media, and micrographs of conidiophores and conidia, and occasionally also of coremia. Color colony photographs would be nice, but getting accurate color reproductions is a difficult task, and the availability of color patches should help. The quality of the photomicrographs should be an inspiration to students struggling to make wet mounts from sporulating cultures.

The book finishes with an extensive references section, and an index. The index could be more extensive. For example, it would be helpful if specific mycotoxins, or morphological characters (e.g., the production of coremia, funicles and synnemata) were listed here.

Overall this is a very useful manual that anyone given the opportunity to identify (or, more commonly, stuck with identifying) *Penicillium* species will find indispensable. Perhaps the best approach would be to use this book in conjunction with standard reference cultures. No such cultures have yet been designated by the International Commission on *Penicillium* and *Aspergillus*, as have been for *Aspergillus*, but type cultures should work well in most cases. Unfortunately, there is no magic bullet that will make accurate morphological identification of *Penicillium* species truly easy, but this manual gives researchers and students the tools to do the job right.

-- David M. Geiser

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BOOKS AND PUBLICATIONS RECEIVED DECEMBER 2001 THROUGH FEBRUARY 2002

▪ **A Monograph of *Bionectria* (Ascomycota, Hypocreales, Bionectriaceae) and its *Clonostachys* Anamorphs**, (Studies in Mycology 46). 2001. H-J Schroers, Centraalbureau voor Schimmelcultures, PO Box 85167, Fungal Biodiversity Center, Utrecht, The Netherlands, www.cbs.knaw.nl. Price: 20,000 Euro. *Review needed*.

▪ **Fungi in Bioremediation**. 2001. GM Gadd (ed.), Cambridge University Press, The Edinburgh Building, Cambridge CB2 2RU, UK, www.cambridge.org. Price: \$120 US. *Review needed*.

PREVIOUSLY LISTED BOOKS FROM OCTOBER 2001

▪ **A Laboratory Guide To Common *Penicillium* Species**, 3rd ed. 2000. JI Pitt, Copies available from Dr. JI Pitt, Food Science Australia, 16 Julius Avenue, Riverside Corporate Park, Delhi Road, PO Box 52, North Ryde NSW, 1670 Australia, John.Pitt@foodscience.afisc.cisro.au, 197 pp. Price: \$65 US including shipping. *Review in this issue of Inoculum*.

▪ **Advances in *Verticillium*: Research and Disease Management**. 2000. EC Tjamos, RC Rowe, JB Heale, DR Fravel (eds.). APS Press, 3340 Pilot Knob Road, St. Paul, MN 55121-2097, aps@scisoc.org, 376 pp. Price: \$54 US. *Requested from publisher*.

▪ **The *Amanita caesarea*-Complex**. Bibliotheca Mycologica No 187. 2001. G Guzman and F Ramirez-Guillen. J Cramer in der Gebruder Borntraeger Verlagbuchhandlung, D-14129, Berlin, Germany, 66pp, Price: Unknown. *Reviewer needed*.

▪ **Atlas of Clinical Fungi**, 2nd edition. 2000. GS de Hoog, J. Guarro, J. Gené and

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MJ Figueras. Centraalbureau voor Schimmelcultures, Padualaan *, Utrecht, NL-3584 CT, The Netherlands, 1126 pp. Price: Not confirmed. *Review in progress.*

▪ **Basic Biotechnology**, 2nd edition. 2001. C Ratledge and B Kristiansen (eds.), Cambridge University Press, The Edinburgh Building, Cambridge CB2 2RU, UK, 568 pp. Price: \$45 US. *Review needed.*

▪ **Bio-Exploitation of Filamentous Fungi**. 2000. SB Pointing and KD Hyde (eds.), Fungal Diversity Press, The center for Research in Fungal Diversity, Department of Ecology & Biodiversity, Kadoorie Biological Sciences Building, The University of Hong Kong, Pokfulam Road, Hong Kong SAR, China, kdhyde@hkucc.hku.hk, Price: \$100 US. + \$16 for air mail. *Requested from publisher.*

▪ **Candida and Candidiasis**. 2001. RA Calderone (ed). ASM Press. PO Box 605, Herndon, VA 2017, books@asmusa.org, 472 pp. Price: \$100 US. *Review needed.*

▪ **Cell Biology of Plant and Fungal Tip Growth**. 2001. A Geitmann, M Cresti, and I B Heath (eds). NATO Science Series I. Life and Behavioural Sciences, IOS Press, Nieuwe Hemweg 6B, 1013 BG Amsterdam, Netherlands, www.iospress.nl, 241pp, Price: unknown. *Review needed.*

▪ **Check List of Hong Kong Fungi**. 2000. BS Lu, KD Hyde, WH Ho, JE Taylor, KM Tsui, MKM Wong, Y Zhou and DQ Zhou (eds.), Fungal Diversity Press, The center for Research in Fungal Diversity, Department of Ecology & Biodiversity, Kadoorie Biological Sciences Building, The University of Hong Kong, Pokfulam Road, Hong Kong SAR, China, kdhyde@hkucc.hku.hk, 376 pp. Price: \$20 US. + \$8 for air mail. *Requested from publisher.*

▪ **Common Florida Mushrooms**. 2000. J Kimbrough. University of Florida Institute of Food and Agricultural Sciences (IFAS), Building 116, PO Box 110810, Gainesville, FL 32611-0810, esquires@gnv.ufl.edu, 342 pp. Price: \$20 US + shipping. *Review needed.*

▪ **Colletotrichum: Host Specificity, Pathology, and Host-Pathogen Interaction**.

2000. D Prusky, S Freeman, and M Dickman (eds.). APS Press, 3340 Pilot Knob Road, St. Paul MN 55121-2097. Aps@scisoc.org, or APS Press Europe Branch Office, Brokestraat 47, B-3001, Heverlee, Belgium, apspress@pophost.eunet.be, 448 pp. Price: \$99 US. *Requested from publisher.*

▪ **Current Advances in Mycorrhizae Research**. 2000. GK Podilla and DD Douds, Jr (eds). APS Press, 3340 Pilot Knob Road, St. Paul, MN 55121. 214 pp. aps@sisoc.org. Price: \$38. *Book requested from publisher.*

▪ **The Deuteromycetes: Mitosporic Fungi Classification and Generic Key**. 2000. E Kiffer and M Morlet. Science Publishers Inc. PO Box 699, Enfield, NH 03748. The book is a translation of: Les Deuteromycetes Classification et Cles d'Identification Generique. 1997. Text updated by the authors for the English edition in 1999. 273 pp. Price: \$85 US. *Reviewed in Inoculum vol 52(6):33.*

▪ **Dictyostelium: Evolution, Cell Biology, and the Development of Multicellularity**. 2001. RH Kessin and J Franke, Cambridge University Press, The Edinburgh Building, Cambridge CB2 2RU, UK. Price: \$90.00 US. *Review in this issue.*

▪ **A Dictionary of Plant Pathology** 2nd edition. 2001. P Holliday. Cambridge University Press, The Edinburgh Building, Cambridge CB2 2RU, UK, www.cambridge.org, 536pp. Price: Hardback - \$120 US, Paperback - \$45 US. *Review needed.*

▪ **Dimorphism in Human Pathogenic and Apathogenic Yeasts**. 2000. JF Ernst and A Schmidt (eds.). S Karger Publishers, Inc., 26 West Avon Road, POBox 529, Farmington, CT 06085, 246pp, Price: \$109 US. *Review needed.*

▪ **Flora Agaricina Neerlandica: Volume 4. Strophariaceae, Tricholomataceae**. 2000. C Bas, THW Kuyper, NE Noordeloos, and EC Vellinga (eds.). AA Balkema Uitgevers B.V., Postbus 1867, NL-3000 BR Rotterdam, Netherlands, sales@balkema.nl, 191 pp. Price: Hfl 2.2. *Review in progress.*

▪ **Funghi Ipogei d'Europa**. 2000. A Montecchihi and M sarasini. Fondazione centro Studi Micrologici dall' Associazione Micologica Bresadola, PO Box 296, 36100 Vicenza, Italy, 714 pp. Price: unknown. *Review in progress.*

▪ **Fungal Associations**, The Mycota Vol9. 2000. B Hock (ed). Springer-Verlag New York, Inc, 175 Fifth Avenue, New York, NY 10010, textbooks@springer-ny.com, 250 pp. Price: \$159 US. (Hardcover). *Requested from publisher.*

▪ **Fungal Conservation: issues and Solutions**. 2001. D More, MM Nauta, SE Evans, and M Rotheroe (eds.), Cambridge University Press, The Edinburgh Building, Cambridge CB2 2RU, UK, www.cambridge.org, 262pp. Price: \$95 US. *Review in progress.*

▪ **Fungal Protoplasts: A Biotechnological Tool**. 2000. D Lalithakumari, Science Publishers, Inc, PO Box 699, Enfield NH 03748, info@scipub.net, 184 pp. Price: \$50 US. *Review needed.*

▪ **Funghi Ipogei d'Europa**. 2000. Associazione Micologica Bresadola, Via A. Volta, 46 - 38100 Trento, Italia. *Book requested from publisher.*

▪ **Fungal Strategies of Wood Decay in Trees**. 2000. FWMR Schwarze, J Engels, and C Mattheck. Springer-Verlag New York Inc, 175 Fifth Ave., New York, NY 10010, link@springer-ny.com, 220 pp. Price: \$54 US. *Book requested from publisher.*

▪ **Fusarium: Paul E Nelson Memorial Symposium**. 2001. BA Summerell, J Lesilie, D Backhouse, WL Bryden, and LW Burgess (eds.), APS Press, 3340 Pilot Knob Road, St. Paul, MN 55121-2097, aps@scisoc.org, 408 pp. Price: \$59 US. *Book requested from publisher.*

▪ **Genera of Ascomycetes from Palms**. 2000. KD Hyde, JE Taylor, J Frohlich (eds.). Fungal Diversity Press, The center for Research in Fungal Diversity, Department of Ecology & Biodiversity, Kadoorie Biological Sciences Building, The University of Hong Kong, Pokfulam Road, Hong Kong SAR, China, kdhyde@hkucc.hku.hk, Price: \$100 US + \$16 for air mail. *Requested from publisher.*

THE MYCOLOGIST'S BOOKSHELF *con't*

- **Hemp Diseases and Pests: Management and Biological Control.** 2000. JM McPartland, RC Clarke, DP Watson. CABI Publishing: Wallingford, Oxon, OX10 8DE, UK. 251 pp. Price: Hardback - \$90 US. *Reviewed in Inoculum 52(1):15-16.*
- **Illustrated Dictionary of Mycology.** 2000. M Ulloa and RT Hanlin. APS Press, 3340 Pilot Knob Road, St. Paul MN 55121-2097. Aps@scisoc.org, or APS Press Europe Branch Office, Brokestraat 47, B-3001, Heverlee, Belgium, apspress@pophost.eunet.be, 448 pp. Price: \$99 US. *Requested from publisher.*
- **Illustrated Genera of Trichomyces: Fungal Symbionts of Insects and Other Arthropods.** 2000. JK Misra and RW Lichtwardt. Science Publishers, Inc., PO Box 699, Enfield, NH 03748, info@scipub.net. 155 pp. Price: \$30 US. *Review needed.*
- **Les Champignons Forestiers, Recolte, Commercialisation et Conservation de la Resource** (Conference proceedings, articles in French and English). 2000. JA Fortin and Y Piche (eds.), CRBF, Universite Laval, Quebec, Canada, G1K 7P4. 119 pp. *Review needed.*
- **Lichens.** W. Purvis. 2000. Smithsonian Institution Press, Washington, DC. 112 pp. Price: \$14.95 US. Available through the Smithsonian Institution Press Warehouse at 1-800-782-4612 or at amazon.com or borders.com. *Reviewed in Inoculum 52 (3):72.*
- **Lichens of Antarctica and South Georgia: A Guide to their Identification and Ecology.** Studies in Polar Research. 2001. DO Ovstedal and RL Lewis-Smith. Cambridge University Press, The Edinburgh Building, Cambridge CB2 2RU, UK, www.cambridge.org, 411pp. Price: \$100 US. *Review in progress.*
- **Lichens of North America.** 2001. IM Brodo, SD Sharnoff, and S Sharnoff. Yale University Press, P.O.Box 209040, New Haven, CT 06520, 795pp. Price: \$70 US. *Review in progress.*
- **Marine Mycology – A Practical Approach.** 2000. KD Hyde and SP Pointing (eds.). Fungal Diversity Press, The center for Research in Fungal Diversity, Department of Ecology & Biodiversity, Kadoorie Biological Sciences Building, The University of Hong Kong, Pokfulam Road, Hong Kong SAR, China, kdhyde@hkucc.hku.hk, 376 pp. Price: \$100 US. + \$16 for air mail. *Requested from publisher.*
- **Microbial Endophytes.** 2000. CW Bacon, JF White, Jr (eds). Marcel Dekker, Inc, New York. 487 pp. *Review needed.*
- **Molecules, Morphology and Classification: Towards Monophyletic Genera in the Ascomycetes. Studies in Mycology 45.** 2000. KA Seifert, W Gams, P W Crous, GJ Samuels. Centraalbureau voor Schimmelcultures: Baarn/Delft, The Netherlands. 230 pp. Price: 100 HLG. *Reviewed in Inoculum 52(5): 27-28.*
- **Molecular and Cellular Biology of Filamentous Fungi.** 2001. N Talbot (ed). Oxford University Press, Great Clarendon Street, Oxford OX2 6DP, UK. www.oup.co.uk/pas, see Practical Approaches Series for additional information, 267pp. price: \$115 US. *Review needed.*
- **Mushroom Science XV, Science and Cultivation of Edible Fungi.** 2000. LJD. Van Griensven (ed). AA Balkema, PO Box 1675, 3000 BR Rotterdam, Netherlands <www.baklema.nl.com>, Ashgate Publishing, Old Post Road, Brookfield, VT 05036, Volume 464 pp. Volume 2 pages 467-964, Hardbacks Price: \$160 U.S. <www.ashgate.com> <info@ashgate.com>. *Reviewed in Inoculum 52 (3):72-73.*
- **Mushrooms of CapCod and the National Seashore.** 2001. AR Bessette, AE Bessette, and WJ Neill. Syracuse University Press, 621 Skytop Rd, Suite 110, Syracuse, NY 13244-5290, sumweb.syr.edu/su_press/, 174pp. Price: Hardback - \$60 US, Paper - \$27 US. *Review needed.*
- **The Mycota Vol VII A & B, Systematics and Evolution.** 2001. DJ McLaughlin, EG McLaughlin, and PA Lempke (eds.). Springer-Verlag New York, Inc., PO Box 19386, Newark, NJ 07195-9386, service@springer-ny.com, Part A 366 pp, Part B 259 pp. Price: Part A is \$215 US, Part B is \$159 US. *Review needed.*
- **Mycotoxin Protocols. Methods in Molecular Biology Vol. 157.** 2000. MW Truckess, AE Pohland (eds). Humana Press Inc: 999 Riverview Drive, Suite 208, Totowa, NJ 07512 USA. 244 pp. *Review needed.*
- **Myxomycetes: A Handbook of Slime Molds,** paperback edition, 2000. SS Stephenson, H Stempen. Timber Press, Inc, 133 SW Second Avenue, Suite 450, Portland OR 97204, mail@timberpress.com, 183 pp. Price: \$19.95 US. *Review in progress.*
- **The Neurospora Compendium.** 2000. DD Perkins, A Radford, and MS Sachs. Academic Press, 6277 Sea harbor Drive, Orlando FL 32887, or 24-28 Oval Road, London NW1 7DX, UK, ap@acad.com. 350pp. Price: \$85 US. *Requested from publisher.*
- **North American Boletes: A Color Guide to the Fleshy Pored Mushrooms.** 2000. AE Bessette, WC Roody, AR Bessette. Syracuse University Press, 621 Skytop Road, Suite 110, Syracuse, NY 13244-5290, twalsh01@syr.edu. 356 pp. Price: \$95 US. *Reviewed in Inoculum 52(3):73-74.*
- **Palm Microfungi.** 2000. J Frolich and KD Hyde (eds.), Fungal Diversity Press, The center for Research in Fungal Diversity, Department of Ecology & Biodiversity, Kadoorie Biological Sciences Building, The University of Hong Kong, Pokfulam Road, Hong Kong SAR, China, kdhyde@hkucc.hku.hk, Price: \$100 US. + \$16 for air mail. *Requested from publisher.*
- **The Rainbow Beneath my Feet: A Mushroom Dyer's Field Guide.** 2001. AR Bessette and AE Bessette. Syracuse University Press, 621 Skytop Rd, Suite 110, Syracuse, NY 13244-5290, sumweb.syr.edu/su_press/, 176pp. Price: Unknown. *Review needed.*
- **Slayers, Saviors, Servants, and Sex: An Expose of the Kingdom Fungi.** 2001. D Moore. Springer Verlag Customer Service, PO Box 2485, Secaucus, NJ 07096, orders@springer-ny.com. Price not confirmed. *Book requested from publishers.*
- **Symbiosis: An Introduction to Biological Associations,** 2nd edition. 2000. S Paracer and V Ahmadjian, Oxford

THE MYCOLOGIST'S BOOKSHELF *concl'd*

University Press, 2001 Evans Road, Cary, NC 27513, 304 pp. Price: \$35 US (Softcover). *Book requested from publisher.*

▪ **Synopsis of Fossil Fungal Spores, Mycelia and Fructification.** 2000. RM Katgutkar and J Jansonius. Order from: Vaughn M Bryant, Jr., Secretary AASP Foundation, c/o Palynology Laboratory, Texas A&M University, College Station, TX 77843-4352, vbryant@neo.tamu.edu, 423pp. Price: \$33 US. *Reviewed in Inoculum 52 (3):74-75.*

▪ **Yeasts: Characteristics and Identification.** 3rd edition. 2000. JA Barnett, RW Payne, D Yarrow. Cambridge University Press, The Edinburgh

Building, Cambridge CB22RU, UK. 1139 pp. Price: \$320 US Hardback. *Review needed.*

OF RELATED INTEREST...

▪ **Enfoques Contemporaneos para el Estudio de la Biodiversidad.** 2001. HM Hernandez, AN Garcia Aldrete, F Alvarez and M Ulloa (eds.), Instituto De Biologia, Universidad Nacional Autonoma de Mexico, Ciudad Universitaria, 04510 Mexico, DF, 413pp. The book is written in Spanish and contains a series of presentations that cover topic as diverse as "Molecular systematics and evolution of cultivated plants", "Biodiversity and conservation

of corals", and the "World and regional diversity of mushrooms." *Contact Book Review Editor if interested in this book.*

▪ **Structure and Function in Agroecosystem Design and Management.** 2001. M Shiyomi and H Koizumi (eds.). CRC Press LLC, 2000 NW Corporate Blvd., Boca Raton, FL 33431, www.crcpress.com, 435 pp. Price: \$65.00 US.

▪ **Editors Note:** Dr. Robert Lichtwart has informed me that: **The Revised Edition of the Trichomycestes: Fungal Associates of Arthropods** is available to anyone at the following website: www.nhm.ukans.edu/~fungi. *Review in progress.*

MYCOLOGICAL CLASSIFIEDS

Upcoming Mycological Workshops and Symposia

ADVANCED HANDS-ON MEDICAL MYCOLOGY WORKSHOP May 16-17, 2002

Mastering Molds and Mycotoxins with Maren and Mike.

This one and a half day program will consist of lectures and hands-on activities regarding potentially pathogenic and toxic molds. Participants will become familiar with the fungi that cause allergic disease, mycotoxicosis, or both. The fungi emphasized will include species of the aspergilli, penicillia and fusaria, as well as other organisms of public health significance in the indoor environment. Participants will examine prepared slides made from environmental samples and cultures to study and review the microscopic morphology of selected organisms. Mycotoxin isolation and identification methods will be presented. Vendors of alternative identification technologies have been invited to explain their molecular and physiologically based methods and to provide as much hands-on experience with these

methods as time will allow. Discussions will include investigating mold contamination in buildings, and the spectrum of the mycoses and mycotoxicoses caused by these fungi common to the human environment.

PRESENTERS:

Maren A. Klich, Ph.D., USDA, ARS, SRRC, New Orleans, LA

Michael R. McGinnis, Ph.D., UTMB, Department of Pathology, Galveston, TX

SITE: School of Medicine, University of Utah, Salt Lake City, UT

FEE: \$275 if registration application is received by March 29th. Later applicants will pay \$350.

TO REGISTER: Contact the National Laboratory Training Network office directly at 303.692.3283 or you may simply reply by e-mail with your name, address, phone and fax number to jim.harris@tdh.state.tx.us. Space in this workshop is limited. Please register early.

-- **James L. Harris**, Ph.D.
Training Coordinator
Bureau of Laboratories
jim.harris@tdh.state.tx.us

Pitt on *Penicillium*

WHEN: Sunday, June 16, 2002 through Thursday, June 20, 2002, 8:00 a.m. to 5:00 p.m. daily. At the LSU Health Sciences Center, 1901 Perdido Street, New Orleans, LA 70112.

SPONSORS: Sponsored by the Texas Department of Health and the National Laboratory Training Network.

PROGRAM DESCRIPTION: Dr **John Pitt**, a recognized world authority on taxonomy of the genus *Penicillium*, will present an intensive, five day, hands on course in which he will lead participants through a review of most of the commonly encountered species of this genus. The intended audience are persons who work in the areas of environmental air quality, biodegradation, food microbiology, medical mycology, industrial microbiology and public health.

CONTINUING EDUCATION CREDITS: Continuing education credits for laboratorians will be offered based on 30 hours of instruction.

COURSE OBJECTIVES: Upon completion of this workshop, participants will be able to:

MYCOLOGICAL CLASSIFIEDS *con't*

- 1) understand the methods and techniques used by taxonomists to identify *Penicillium* species;
- 2) select and inoculate appropriate identification media;
- 3) observe and record the significant microscopic and macroscopic features used to differentiate species; and
- 4) correctly use a key to confirm the species identification.

COURSE FEE: \$500.00 for persons registering BEFORE May 3. Tuition after May 3 is \$600.00. Fee includes all

culture materials, a *Penicillium* key, microscope rental, transportation between hotel and workshop site.

LODGING ACCOMMODATIONS: Upon receipt of your application, hotel information will be sent to you.

HOW TO REGISTER (registration will be administered by): South Central Office, National Laboratory Training Network, 325 Loyola Avenue Rm 709, New Orleans, LA 70112; 504.568.2081; FAX: 504.568.2083; email: scoffice@nltn.org.

You may request a registration form from the office or, if you would like to secure your

place in the workshop, send in your check (refer to Workshop #00SC24). MAKE CHECKS PAYABLE TO AAPHL. Be sure to include your mailing address and fax number so that we can send you a registration form to complete. Upon receipt of your check and completed registration form, you will receive information about the hotel and schedule for daily transportation to and from the workshop.

-- **James L. Harris**, Ph.D.
Training Coordinator
Bureau of Laboratories
jim.harris@tdh.state.tx.us

Fleshy Fungi of the Highlands Plateau Course July 15-27, 2002

Fleshy Fungi of the Highlands Plateau, Highlands Biological Station, Highlands, North Carolina. The Southern Appalachian Mountains are world-renowned for their incredibly rich diversity of fleshy fungi. Participants will be introduced to the fleshy ascomycetes and basidiomycetes that occur on the Highlands Plateau during peak mushroom season. Emphasis will be placed on analysis of macro- and micromorphological features in the identification of taxa. The daily routine consists of morning lectures on systematics, ecology, and phylogeny of fleshy fungi followed by field trips until early afternoon. Collections will be examined and identified after returning from the field, providing an opportunity to assemble an impressive collection of fleshy fungi for classroom instruction and research. Housing is available at the station for \$50-70 per week (with linen). The station does not serve meals but a fully equipped kitchen is available with grocery stores and restaurants available in town. Three semester hours of advanced undergraduate credit is available from Western Carolina University or UNC-Chapel Hill. Tuition is \$400. For additional information contact Dr **Andrew S Methven**, Department of Biological Sciences, Eastern Illinois University, Charleston, IL 61920;



*Andy Methven,
instructor of
the Fleshy
Fungi of the
Highlands
Plateau Course*

phone 217.581.6241; Email: [<cfasm@eiu.edu>](mailto:cfasm@eiu.edu) or Dr **Robert Wyatt**, Director, Highlands Biological Station, PO Box 580, Highlands, NC 28741; Website: [<www.wcu.edu/hibio>](http://www.wcu.edu/hibio).

-- **Andy Methven**

8th New Phytologist Symposium June 9-14, 2002

The 8th New Phytologist Symposium 'Impacts of Soil Microbes on Plant Population Dynamics and Productivity' will be held at the Viikki Biocenter, University of Helsinki, Finland. Distinguished speakers working on plant-fungal associations will present papers in targeted sessions. You are cordially invited to attend this symposium, which forms part of the 100th anniversary celebrations of the New Phytologist. For additional details see [<www.biocenter.helsinki.fi/nps2002/>](http://www.biocenter.helsinki.fi/nps2002/).

-- **Robin Sen**, PhD
robin.sen@helsinki.fi

Professor Orson K. Miller Has Books For Sale

I have had a series of duplicate books both at home and at the lab. The books below are for sale and prices will be sent on request to [<orsonk@cs.com>](mailto:orsonk@cs.com) but do not include the cost of shipping.

Bigelow, H.E. North American Species of Clitocybe Parts 1 (1982) and 2 (1985). Cramer. Mint condition.

Dennis, R.W.G. British Ascomycetes Cramer 1968 455p, & figures. Good condition.

Fries, E. Systematis 1830. Mycologici Copy from Dehra Dun India done in 1989. Mint condition.

Moser, M 1978. Die Rohrlinge und Blatterpilze. Gustav Fischer Verlag. 531p. (in German) Mint condition (has the color plate with it).

Romagnesi, Henri 1967. Les Russules. Bordas 998p. 1985 Cramer reprint. Rebound -- in good condition.

Seaver, F.J. 1928. North American Cup-Fungi. Operculates and Inoperculates. Reprint 1978. Lubrecht and Cramer, Monticello, NY. Both volumes are in mint condition.

-- **Orson Miller**, PhD
orsonk@cs.com

MYCOLOGICAL CLASSIFIEDS *concl'd*

Mycopix, Volume 1: Plant-Parasitic Fungi

Mycopix, Volume 1: Plant-Parasitic Fungi, an image collection which contains more than 1,000 images and an index with key words on CD Rom, is invaluable for teaching, making web pages, Powerpoint presentations, extension publications and brochures, as well as for seminar and classroom lectures. The CD images, which were obtained from plant pathology professors of the United States and Europe, can also be recorded onto film and used in 35mm slide shows. This CD ROM contains a self-running picture show that can be used to attract viewers to observe the harmful effects caused by these plant-parasitic fungi.

The image database is searchable according to key words, description, and taxonomic classification. The individual images can be used without permission provided that proper credit is given. Additional use for profit requires permission from the original author.

In order to get an idea of the quality of our photographs, please visit our website, <<http://www.mactode.4dw.com>>. Price: \$260. Postage & handling: USA: Please add \$3.95 for each shipment plus \$1.00 per CD. OTHER COUNTRIES: Please add \$3.95 for each shipment plus \$3 per CD. Purchase orders, checks and credit cards (Visa/Mastercard) are gladly accepted. Mactode Publications, 3510 Indian Meadow Drive, Blacksburg, VA 24060; 540.231.4650; FAX 707.988.8647.

Coming soon: Mycopix Vol. 2: A Journal of Mycological Images, Mushrooms of the Eastern U.S.

-- Marilyn Eisenback
Publisher
mactode@mac.com

Fungi of the Dominican Republic: "Philatelic Collectibles"

The National Office of Wildlife and Biodiversity of the State Undersecretary's Office for Protected Areas and Bio-diversity of the State Secretary for the Environment and Natural Resources and The Dominican Postal Institute placed into circulation on 13 September, 2001 an issue of postal stamps titled "Fungi of the Dominican Republic."

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Heroes de Luperon, Esq. Rafael
Damiron
Centro de los Heroes
Santo Domingo, Republica Dominicana
For further information, including
costs, call 809.534.5838 ext. 268, or FAX
809.534.7819.



This issue, consisting of four postal stamps portraying the species *Coriolopsis polyzona*, *Morchella elata*, *Mycena epipterygia* and *Pycnoporus sanguineus*, was illustrated by the artist **Daniel Ortega** in acrylic on illustration cardboard. Daniel Ortega was inspired by the photographic compositions of **Omar Paino Perdomo**. The species were gathered in the Dominican Republic by **SA Cantrell** and **OP Perdomo**.

The goal of this lithographic edition of images from the fungal kingdom is to inform not only the national and international scientific community, but also to the specialist of philately, about the visual beauty and the biodiversity of the mycoflora of the island of Hispanola.

Those interested may send their requests directly to the Philatelic Service. Pay by cash, postal check, bank check or Visa for the full amount and mailing cost to:

Instituto Postal Dominicano

-- Ylonka Nacidit
Coordinator
Sociedad Dominicana de Micologia

Mycological Goods and Services

Mold testing and identification services.

Identification and contamination control for indoor air quality including home and building mold test kits, food technology, spawn technology, plant diseases. ASTM & Mil-Spec testing for aerospace, controlled environments and environmental engineering. 10% discount for regular and sustaining MSA members. Email <microbe@pioneer.net>; Voice mail 541.929.5984; Surface mail **Abbey Lane Laboratory LLC**, PO Box 1665, Philomath, OR 97370 USA. For more information see <www.pioneer.net/~microbe/abbeylab.html>.

-- Steven E. Carpenter
Abbey Lane Laboratory LLC

CALENDAR OF EVENTS

Event dates and descriptions precede event locations (italic boldface), contacts (plain font), and Email/Websites (bold face, no brackets). Those wishing to list upcoming mycological courses, workshops, conventions, symposia, and forays in the Calendar should submit material formatted as shown below and include complete postal/electronic addresses.

2002 (April 20 - 21). Mid-Atlantic States Mycology Conference.
DETAILS: *Inoculum* 53(2):16.
USDA-ARS, Beltsville, MARYLAND
Erin McCray
Erin@nt.ars-grin.gov

2002 (May 22 - 26). IOBC/WPRS Phyto-pathogens Working Group 7th Workshop – Influence of a-biotic and biotic factors on biocontrol agents.
DETAILS: *Inoculum* 52(1): 13.
Kusadasi, TURKEY
Dr. Yigal Elad
elady@netvision.net.il

2002 (May 13 - 17). IV Latin American Congress of Mycology.
DETAILS: *Inoculum* 52(2): 16-17.
Xalapa, State of Veracruz, MEXICO
Gaston Guzman
guzmang@ecologia.edu.mx
mata@ecologia.edu.mx
http://www.ecologia.edu.mx/alm

2002 (May 16 - 17). Advanced Hands-On Medical Mycology Workshop: Mastering Molds and Mycotoxins with Maren and Mike.
DETAILS: *Inoculum* 53(2):23.
Salt Lake City, UTAH
National Laboratory Training Network
303-692-3283
James L. Harris
jim.harris@tdh.state.tx.us

2002 (June 16 - 20). Pitt on Penicillium.
DETAILS: *Inoculum* 53(2):23-24.
New Orleans, LOUISIANA
South Central Office
National Laboratory Training Network
504-568-2081
Fax: 504-568-2083
scoffice@nltn.org

2002 (June 9 - 14). 8th New Phytologist Symposium.
Helsinki, FINLAND
Robin Sen
robin.sen@helsinki.fi

2002 (June 22 - 26). 2002 MSA Annual Meeting.
Corvallis, OREGON
Keith Egger, Chair
Program Committee
egger@unbc.ca

2002 (July 27 - August 1). International Union of Microbiology Societies (IUM).
DETAILS: *Inoculum* 52(5): 26.
Paris, FRANCE
http://www.iums-paris-2002.com/

2002 (August 11-17). 7th International Mycological Congress (IMC VII)
DETAILS Second Circular: *Inoculum* 53(1):15
Oslo, NORWAY
Leif Ryvarden, Botany Dept
Biological Institute
Box 1045
Blindern, N-0316 Norway
47.22854623 FAX 47.22856717
leif.ryvarden@bio.uio.no
http://www.uio.no/conferences/imc7/

2002 (August 4-9). 4th International Congress on Systematics & Ecology of Myxomycetes
DETAILS: *Inoculum* 53(1):15
Brussels, BELGIUM
J. Rammeloo, PhD
Director, National Botanic Garden of Belgium
President of the ICSEM-4 Congress
Secretariat, Domein van Bouchout
B-1860 Meise, Belgium
Rammeloo@br.fgov.be

2002 (October 10 -13). NAMA Annual Foray.
DETAILS: *Inoculum* 53(2):16.
Diamond Lake, OREGON
Judy Rogers
namyco.org
Phyllis Cole
yamacole@cruzio.com

2002 (November 4-8). 3rd Asia-Pacific International Mycological Conference on Biodiversity and Biotechnology
Kunming, Yunnan, CHINA
Dr. Dequn Zhou, Secretary
Southwest Forestry College
Kunming, Yunnan, China 650224
Phone: ++86-871-3862737
zhoudq@public.km.yn.cn

2002 (November 24-29). Biotechnology Habana 2002. "Agro-Biotech in the New Millennium."
DETAILS: *Inoculum* 52(6):31.
Havana, CUBA
Carlos Borrot, President
mailto:bioagro@cigb.edu.cu
http://bioagro.cigb.edu.cu
Phones: 53-7-218008, 53-7-218466

2003 (January 28-30). 9th International Fusarium Workshop.
DETAILS: *Inoculum* 52(2): 16
Sydney, AUSTRALIA
Brett Summerell
Royal Botanic Gardens
Mrs Macquaries Rd.
Sydney, New South Wales, 2000, Australia
+61 2 9231 8189 FAX +61 2 9241 1135
Brett.Summerell@rbgsyd.nsw.gov.au

2003 (July 27 - 31). 2003 MSA Annual Meeting.
Pacific Grove, CALIFORNIA

2004. MSA Annual Meeting.
Asheville, NORTH CAROLINA

2005. MSA Annual Meeting.
HAWAII

Change of Address

Send all corrections of directory information, including e-mail addresses, directly to Allen Press
Mycological Society of America
Attn: Linda Hardwick, Association Manager
PO Box 1897 [810 E 10th St]
Lawrence, KS 66044-8897
Vox 800.627.0629 (US and Canada)
or 785.843.1221
Fax 785.843.1274
Email **lhardwick@allenpress.com**

Note: Members may also submit directory corrections via the form included in the MSA directory via the MSA Home Page: <http://www.msafungi.org>

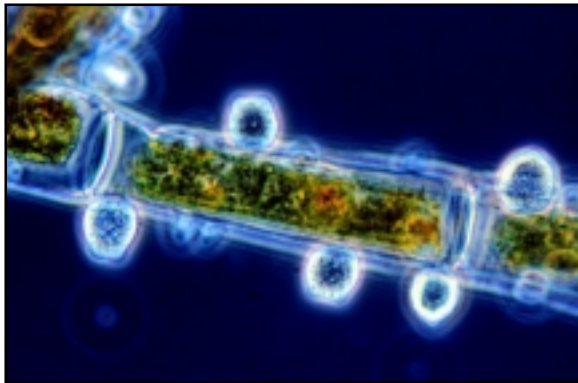
MYCOLOGY ON-LINE

MYCOLOGY ON-LINE DIRECTORY

Below is an alphabetical list of websites featured in *Inoculum* during the past twelve months. Those wishing to add sites to this directory or to edit addresses should Email <druch@bsu.edu>. **Unless otherwise notified**, listings will be automatically deleted after one year (at the editors discretion). * = New or Updated info (most recent *Inoculum* Volume-Number citation)

ASCOMYCOTA –NEW CLASSIFICATION (51-5) http://194.131.255.3/cabipages/Names/FundicNew.asp	IMC7 (51-3) http://lsb380.plbio.lsu.edu/ima/index.htm	MYCOLOGICAL PROGRESS (52-3) http://www.botanik.biologie.uni-muenchen.de/botsyst/mycpro.html
ASOCIACION LATINOAMERICANA DE MICOLOGIA (51-5) http://www.ecologia.edu.mx/alm/	ING (INDEX NOMINUM GENERICORUM) DATABASE (52-5) http://rathbun.si.edu/botany/ing/ingForm.cfm	MYCOSEARCH WEB DIRECTORY/SEARCH ENGINE (51-5) http://www.mycosearch.com
BIBLIOGRAPHY OF SYSTEMATIC MYCOLOGY (51-6) http://194.131.255.3/cabipages/BSM/bsm.htm	INTERACTIVE CATALOGUE OF AUSTRALIAN FUNGI (52-1) http://www.rbgmelb.org.au/fungi/	MUSHROOM WORLD [NEW KOREAN/ENGLISH SITE IN 2001] (51-6) www.mushworld.com
EUROPEAN POWDERY MILDEWS (52-2) http://nt.ars-grin.gov	INTERACTIVE KEY, DESCRIPTIONS & ILLUSTRATIONS FOR <i>HYPOMYCES</i> (52-6) http://nt.ars-grin.gov/taxadescriptions/hypomyces/	NAMA POISON CASE REGISTRY (51-4) http://www.sph.umich.edu/~kwcee/mpcr
GOOGLE: NIFTIEST GENERAL SEARCH ENGINE (51-6) WWW.GOOGLE.COM	MSA BULLETIN BOARD (51-5) http://msafungi.org/bulletinboard/	PATHOGENIC FUNGI FROM SOUTH AFRICA (52-4, page 29) http://nt.ars-grin.gov/fungalDATABASES/southafrica or http://www.saspp.co.za/
HADRIANUS JUNIUS STINKHORNS (52-2) http://www.collectivesource.com/hadrianus		

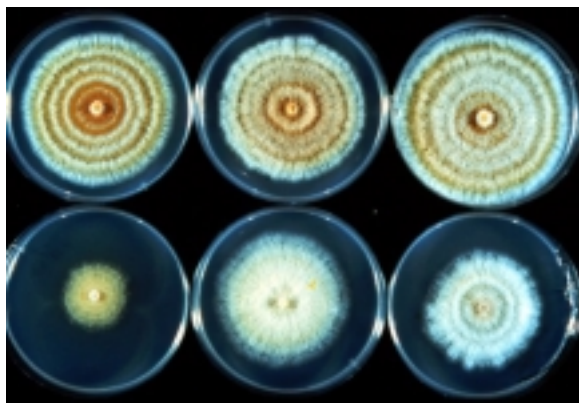
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Rhizophydium. Sporangia on a moribund filament of *Oedogonium* sp. Contributed by Don Barr.



Gyromitra californica. Contributed by Fred Rhoades.



Three virulent (V) strains of *Cryphonectria parasitica* (top) and their hypovirulent (H) converts (bottom). Each H strain is directly under its V progenitor and has the same nuclear genotype. Difference in morphology is caused by cytoplasmic genes from Italian H strains. [PDA (Difco), 12 hrs white fluorescent light, 28 C (12 hr)]. Contributed by Sandra Anagnostakis.

inoculum

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