Bovista, Mycenastrum, and Other Puffballs of the Carden Alvar

by John Sparling

The Carden Alvar in Ontario, Canada, is a large limestone plain occupying lands that were flooded by large glacial lakes formed after the retreat of the ice sheet. Generally there is a thin soil cover except in lowlying areas, where deeper sandy and peat soils occur. The openness of the alvar has been caused by past fires and heavy grazing pressure that suppress tree growth.

Alvars possess a flora with many plants rare or absent elsewhere. An important factor in the ecology is that the grazing increases the nitrogen content of the soil as well as causing surface soil disturbance. This decreases many alvar plants and at the same time encourages the presence of weedy species.

During a foray in September and October 2005 to inventory the fungi and assess presence of typical forest and grassland fungi, we were surprised at the numbers of fungi associated with dung-enriched soils including several puffballs.

Puffballs are oval to round gillless fungi often common in nitrogen-rich grasslands and woodlands. Most grow on the soil, where they are attached by a number of rhizoids. The rhizoids are aggregations of hyphae, which penetrate into the humus and absorb nutrients and moisture.

Amongst the first we found were small to medium-sized white puffballs almost spherical and with a smooth outer case, the exoperidium, that on closer examination was shown to have no sterile base and a mycelial taproot. This was Bovista pila, which seemed to be the commonest gasteromycete on the alvar. We were pleased to find the other Bovista present in Ontario, growing in the shrubby and wooded areas. This was Bovista plumbea; the identification was confirmed by Mycenastrum corium.

Mycenastrum corium Carden

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Mycenastrum corium Carden

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Spread the Word: Mycology

The prime purpose of NAMA is to educate our members and the public about fungi. As chair of the NAMA Education committee, I think that we all need to do more education. If every member of NAMA contributed in some way to the teaching of mycology, we could spread a tremendous amount of knowledge about fungi.

In the K-12 curriculum in the United States, there is little interest in including mycology. With the addition of so much testing in schools, as required by No Child Left Behind and state mandates, there is a reluctance to add anything to the curriculum.

As far as I know, there is not a College Board Advanced Placement Course on mycology for high school students. Only 40% of the high schools in the US can afford to teach Advanced Placement courses, and they are turning to science courses on the Internet that include virtual laboratories. Does anyone offer such a course on Mycology?

The National Science Teachers Association (NSTA) devotes almost no attention to mycology in their publications, in the NSTA Convention programs, and in the books that they recommend. If any of you are members of NSTA, please encourage them to put more emphasis on mycology. Just hearing it from me does not have enough impact on them.

More often lately, I read about developing a K–16 curriculum in the U.S., so we need more cooperation between professional mycologists and K–12 schools to develop course outlines and textbooks on all levels of education.

A wonderful all-day symposium on fungi for science teachers and the public just took place in Oakland, CA. It was co-sponsored by the California Academy/Education (www.calacademy.org/education/bioforum/bioforum2006-2007/bioforum2006-2007-7_fungi.php) and the Oakland Museum and was entitled "Bioforum: Scientific Explorations of the Fungal Realm, a symposium for science teachers about the wonder of fungi." Speakers included Dr. Dennis Dejardin, SFSU; Dr. Thomas Bruns, UC–Berkeley; Dr. Dave Rizzo, UC–Davis; and Dr. Terry Henkel, Humboldt State. We hope that this will be a model for similar symposiums around the country.

At the 2004 NAMA–MSA meeting in North Carolina, MSA sponsored a four-day mycology course for teachers in the area. Perhaps we can have a course for teachers at the 2007 Foray.

I would encourage every member of NAMA to participate in the great fungi teach-in. You can teach in schools, nature centers, club meetings, on field trips, at forays, conferences, science museums, and in adult education schools. You can write articles, recommend books, loan nonmembers your copies of The Mycophile, McIlvainea, Mushroom the Journal, and your club newsletters. You can rent the NAMA Mushroom Teaching Kits to help teachers in your area. You can contribute teaching information to the NAMA Web site (www.namyco.org) and on club Web sites. You can participate in a mycobitz in your area or do an ongoing fungi study in a local park. You can contribute photographs, videos, courses, and other means of identification to Web sites. Some of us have been doing this for a long time, but we can all do it.

Send me some feedback about what you are doing. As my favorite mentor, Dr. Sam Ristich, would say, “Let us open people’s eyes to the wonderment of nature.” —Sandy Sheine
Point Reyes National Seashore Mycoblitz Foray
Saturday, January 20
This is an effort to collect and document the fungi at Pt. Reyes—a cooperative venture of local mushroom clubs, UC–Berkeley, San Francisco State University, and the national park. Learn about fungi and the unique habitats of Pt. Reyes and have fun. Meet at the Bear Valley Visitor Center at 9:00 a.m. to sign up for a collecting route and get maps, wax bags, and field labels. For more information and to register, contact David Rust at <incredulis@yahoo.com> or (510) 468-5014.

All California Club Foray
January 26–28
Members of California mushroom societies are invited to attend the second biannual All California Club Foray at the Albion Field Station in Mendocino County. Activities for the weekend include guided field trips to prime, local mushroom habitats; mushroom ID; and fabulous food. Co-sponsored by the Bay Area Mycological Society and the Fungus Federation of Santa Cruz. For more information and to register, contact Debbie Viess at <amanitarita@yahoo.com> or (510) 430-9353.

2nd Annual Oregon Truffle Festival Grand Dinner
January 27
Eugene, OR, U.S.A
This dinner, hosted by Stephanie Kimmel and Rocky Maselli, features James Beard Award-winning Oregon chefs Philippe Boulot, Greg Higgins, Vitaly Paley, Cory Schreiber. Tickets are $150 per person. The event will take place at 6:30 p.m. at Lane Community College’s CML Conference Center, 4000 E. 30th Ave., Bldg. 19, Eugene. For full schedule of events including information on registering, visit www.oregontrufflefestival.com or call (503) 269-5929.

Medical Mycology Society of the Americas
Toronto, Ontario, Canada
May 20–24
Annual Meeting of the Society

2007 MSA Meeting & Foray
August 4–9
Louisiana State University
Baton Rouge, LA, U.S.A.
This year the Annual MSA Meeting will include a foray to be held August 5. See the MSA Web site for details: www.msafungi.org.

Although winter is upon us and the woods are mostly devoid of mushrooms, the literature out there is chock full of things fungi! The most recent issues of many of my magazines and journals are sitting on my desk, dog-eared, so let’s see what I’ve come up with.

Genomes Highlight Plant Pathogens’ Powerful Arsenal:
A recent issue of the journal Science (313: 1261–66) reports that draft genome sequences have been determined for the soybean “fungal” pathogen Phytophthora sojae and the sudden oak death pathogen Phytophthora ramorum. Oömycetes such as these Phytophthora species were long considered fungi (based on their appearance), but are now classified in the kingdom Stramenopila with photosynthetic algae such as diatoms. The presence of many Phytophthora genes of probable phototroph (photosynthetic organism) origin supports a photosynthetic ancestry for the stramenopiles (for more on this, see the Book Reviews in this issue). Comparison of the two species’ genomes reveals a rapid expansion and diversification of many protein families associated with plant infection such as hydrolases, ABC transporters, protein toxins, proteinase inhibitors, and, in particular, a superfamily of 700 proteins with similarity to known oömycete avirulence genes.

Sudden oak death (SOD) has been in the news quite a bit lately, but the entire genus is infamous for its destruction of plants and impact on humanity. The genus Phytophthora (aptly, Greek for “plant destroyer”) contains some 70 species that can attack just about all species of broadleaf plants. Most noteworthy is potato; the pathogen was responsible for famine of Ireland and Europe in the mid 1800s, and every year it still causes $5 billion damage to the crop worldwide. No small potatoes. (That was rotten, I know!) Besides better determining the evolutionary origins for the genus, and Oömycetes, the large team of researchers, led by Brett Tyler of Virginia Polytechnic Institute, hopes to eventually be able to slow the assault of these pathogens by either designing better chemical treatments or engineering stronger resistance (to the pathogen) in the plants.

In another issue of Science (314: 661–64) scientists have constructed a molecular phylogeny for the cellular slime mold Dictyostelium discoideum. Cellular slime molds

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are another group of organisms that spend their lives masquerading as fungi [see above paragraph]. In general, they're no longer considered to be true fungi and sometimes go by the name of social amoebas [or Dictyostelia] because of their curious morphology and growth habits (they exist as single amoeobid cells for periods of time, then will swarm together for purposes of spore production). Despite widespread interest in Dictyostelium discoideum as a model system to study cell communication and multicellular development, almost no molecular data exist from the rest of the group. The team of researchers led by Sandra Baldauf at the University of York in the UK constructed the first molecular phylogeny of the Dictyostelia, utilizing nearly all of the known 90 species, and found that dictyostelid taxonomy requires complete revision. Their current taxonomy, first described more than 50 years ago, is based purely on morphology. By the way, the full genome of D. discoideum was published in Nature in 2005.

While we’re on the subject of Dictyostelium... New research published by Rice University biologists in a recent issue of the journal Nature (442: 881–82) finds that even the simplest of social creatures have the ability not only to recognize their own family members but also to selectively discriminate in favor of them. The study provides further proof of the surprisingly sophisticated social behavior of microbes, which have been shown to exhibit levels of cooperation more typically linked to animals. Recognizing one’s own family is a common trait among animals—be they chimpanzees, ground squirrels or paper wasps and sometimes go by the name of social amoebas (or Dictyostelia) because of their curious morphology and growth habits (they exist as single amoeobid cells for periods of time, then will swarm together for purposes of spore production). Despite widespread interest in Dictyostelium discoideum as a model system to study cell communication and multicellular development, almost no molecular data exist from the rest of the group. The team of researchers led by Sandra Baldauf at the University of York in the UK constructed the first molecular phylogeny of the Dictyostelia, utilizing nearly all of the known 90 species, and found that dictyostelid taxonomy requires complete revision. Their current taxonomy, first described more than 50 years ago, is based purely on morphology. By the way, the full genome of D. discoideum was published in Nature in 2005.

The investigators sought to find out whether D. purpureum discriminate by preferentially directing this altruism toward their relatives. In the lab, wild-caught cellular slime molds were cultured, food was withheld, and the microbes in each dish formed dozens of slugs and fruiting bodies. Upon observing their social development, the team observed that individual fruiting bodies contained predominantly one strain or the other. It’s unclear how D. purpureum distinguishes relatives from non-relatives, but it likely relies on a genetic mechanism.

Magical Mushroom Tour: The September 2006 issue of Scientific American discusses the findings of a paper published earlier in the July 12 issue of the journal Psychopharmacology. Mycophiles know that psychedelic mushrooms have for millennia been said to trigger mystical experiences. The drugs, primarily psilocybin, showed some initial promise in treating chronic pain and depression in terminally ill patients but a wave of recreational abuse in the late 1960s led to outlawing and a halt in research. Now it seems the most rigorous scientific experiment with the hallucinogen, and the first in 40 years, proved capable of producing mystical states in the laboratory safely. A rigorous, double-blind study has reopened the doors of scientific investigation, reporting spiritual effects and long-term impacts from the use of psilocybin. Neuroscientist Roland Griffiths of Johns Hopkins University and his colleagues tested the effects of psilocybin—which appears to mimic the effects of serotonin in the brain—on 36 middle-aged Americans who had never tried psychedelics before. The volunteers were chosen because they all are “spiritually active” and “who might interpret the experiences best,” according to the researchers. Many researchers believe that psychedelic effects are driven in a large part by expectations of the experience so neither monitors nor subjects knew when they would be given the psychoactive drug. This blinding seemed to work as even the medically experienced monitors misidentified which drug had been given in 23 percent of the sessions. Volunteers were given a drug or placebo, made comfortable, and kept from distractions. Immediately following the roughly eight-hour sessions, the participants were asked to fill out a series of questionnaires designed to probe the nature and quality of the experience. Twenty-two out of the 36 volunteers described a so-called mystical experience, or one that included feelings of unity with all things, transcendence of time and space as well as deep and abiding joy. In follow-up interviews conducted two months later 67 percent of the volunteers rated the psilocybin experience as among the most meaningful of their lives, comparing it to the birth of a first child or the death of a parent, and 79 percent reported that it had moderately or greatly increased their overall sense of well-being or life satisfaction. Independent interviews of family members, friends and co-workers confirmed small but significant positive changes in the subject’s behavior and more follow-ups are currently being conducted to determine if the effects persist a year later. The authors of the study say that further investigations should be conducted to determine the efficacy of such mushroom...
compounds as tools for understanding the neurobiology of human consciousness, self-awareness and their potential as therapeutic agents.

**Fungi and Fungal Toxins as Weapons . . .**

Should we be afraid? A paper in the September issue of the journal *Mycological Research* (110[9]: 1003–10) provides an excellent overview and should be read by all mycophiles living in a “post 9/11 world.” Recent aggressive attacks on innocent citizens have resulted in governments increasing security. However, there is a good case for prevention rather than reaction. Bio-weapons, mycotoxins, fungal biocontrol agents (FBCA), and even pharmaceuticals contain, or are, toxins and need to be considered in the context of the new paradigm. Is it desirable to discuss such issues? Russell and Paterson, two researchers from Portugal, point out that none of the fungi are (a) as toxic as botulinum toxin from *Clostridium botulinum*, and (b) as dangerous as nuclear weapons. One toxin may be defined as a pharmaceutical and *vice versa* simply by a small change in concentration or a moiety. Mycotoxins are defined as naturally occurring toxic compounds obtained from fungi. They are the biggest chronic health risk when incorporated into the diet. The current list of fungal toxins as biochemical weapons is small, although awareness is growing of the threats they may pose. T-2 toxin is perhaps the biggest concern. A clear distinction is required between the biological (fungus) and chemical (toxin) aspects of the issue. There is an obvious requirement to be able to trace these fungi and compounds in the environment and to know when concentrations are abnormal. This paper indicates how to treat mycotoxiosis and decontaminate mycotoxins. There is considerable confusion and inconsistency surrounding this topic that requires assessment in an impartial and scientific manner. Of course I’m greatly summarizing here; their paper provides an excellent review of the topic of mycotoxins as potential weapons.

Also from *Mycological Research* (110[10]: 1179–83) comes an article titled “Fatty acid composition of lipids from mushrooms belonging to the family *Boletaceae*” by Canadian researchers Pedneault et al. The fatty acid (FA) composition of 11 mushroom species of the family *Boletaceae* was determined. More than 25 different FAs were found in the mushroom lipids. Unsaturated FAs, mainly linoleic and oleic acids, accounted for about 83% of the total FA. See, mushrooms ARE healthy for you! Hopefully I don’t have to tell you that linoleic acid is an essential fatty acid—we cannot make it ourselves but must get it from our diet. So, eat up!

And while you’re at it, have a little wine with your mushrooms. From that same issue of *Mycological Research* (110[10]: 1184-1192) researchers have published a method to identify the powdery mildew fungus of grapes, *Erysiphe necator*, directly from grape juice. The sensitivity of their new test method is key, as very little of the fungus (only about 1% infection rates—previously undetectable amounts, or nearly so) is all that’s necessary to ruin a batch of wine juice.

Also published by the British Mycological Society is *The Mycologist*, which has a terrific review article by Anke and Weber (20[3]: 83–89) on white-rot and brown-rot fungi. Timely, as that’s about the only mushrooms you’ll find in the woods right now. The article does a great job of explaining the difference between the two types of fungi and how they break down wood.

**From the pages of Mycologia:** Yang and Pfister of Harvard University have published “*Monotropa uniflora* plants of eastern Massachusetts form mycorrhizae with a diversity of russulaceous fungi” [98[4]: 535-540]. Plant species in the subfamily Monotropoideae [including *Monotropa* or “Indian pipes”) are mycoheterotrophs; they obtain fixed carbon from photosynthetic plants via a shared mycorhizal network. Previous findings show mycoheterotrophic plants exhibit a high level of specificity to their mycorrhizal fungi. In this study they explored the association of mycorrhizal fungi and *Monotropa uniflora* in eastern North America. The investigators collected *M. uniflora* roots and nearby basidiomycete sporocarps from four sites within a 100 km² area in eastern Massachusetts. Using DNA sequence techniques, they found that all 56 sampled *M. uniflora* mycorrhizal fungi were members of the Russulaceae, including isolates from the genera *Russula* and *Lactarius*. The truly fascinating aspect of this association is that the sugars that the mycoheterotrophic plant [*Monotropa*] uses to build its tissues are coming from a phototroph (the plant that *Russula* is a symbiont with). The mycorrhizal fungus is merely a bridge, allowing *Monotropa* access to that photosynthate.

**Earthly Delights** is the title of an article in the “Eating Wisely” section of the October issue of *Yoga Journal.* The article describes a number of fresh mushrooms (common and exotic) and then explains their health benefits. More importantly (to me), the author then describes terrific ways to prepare them. Tempura Maitake, anyone? Thanks to member Bill Petty of Florida (and to his daughter who passed it on to him) for sending me the article.

**Photographic Delights** abound in the November 2006 issue of *National Geographic.* A beautiful photo essay is featured, highlighting some incredible shots taken in Ecuador by the writer, photographer, and insect biologist Mark W. Moffett. If unfamiliar—he seems to be everywhere; I recently heard an interview with him on NPR—then try to track down his terrific Web site.

**The Fungal Tree of Life**—Probably the biggest fungal news from the journals since the last issue of *The Mycophile* was the publication of “Reconstructing the early evolution of fungi . . .” in the October 19 issue of *Mycologia*.

The Fly-Truffler is a pretty little book. No, there are no pictures of mushrooms—or anything else for that matter. The book is actually a novel by the acclaimed author and poet Gustaf Sobin. In fact, the book could probably be called a novella—partly because of its length [it can be read in a single sitting], but also because it’s very engrossing. And the language of Sobin... very pretty. The topic of the book is of a fungal sort, and there aren’t many such works of fiction out there, so I feel compelled to review it in these pages.

Our hero is a certain Philippe Cabassac, a French linguistics professor whose pet subject is the dying Provençal language. Devoting one’s life to the study of a fading language can be tough emotionally and financially, I’m guessing. He lives in a dilapidated farmhouse—the family home for eight generations—selling off a parcel of land each year in order to make ends meet. Every sale is a small betrayal, for Cabassac’s roots in the Provençal landscape run deep. To fill his larder (and rejuvenate his mind) he stalks the estate’s property for natural delicacies, “truffling every winter, gathering wild asparagus in the spring, flowering medicinal herbs each summer, and a plethora of pale, speckled mushrooms each fall.” He is most devoted to the art of truffling and, not unlike, the Old World truffle gatherers who use pigs or dogs, he watches for the fungus flies, “œle mousco,” which, drawn by the rich scent of truffles, lay their eggs in the loose topsoil nearby.

Since the death of Cabassac’s young wife Julieta, the truffles have come to represent something far more to Cabassac’s palate: these black truffles have a strange additional power, one that gives Cabassac’s hunt a special urgency: eating them brings on dreams of his recently deceased wife. Desperate to prolong his nighttime contact with Julieta, he neglects teaching, his estate, and indeed all the obligations of his waking life—except for hunting the keys to the underworld where his wife dwells.

The book is so richly written that you can almost smell the damp earth which Cabassac’s fingers probe—desperately, somnambulistically—for one more of those hypo-geous sporocarps.

—Britt Bunyard

Michael Beug Wins NAMA Award

The NAMA Award for Contributions to Amateur Mycology for 2006 has been awarded to Dr. Michael W. Beug, Ph.D. Congratulations, Michael!

Dr. Beug is Chairman of the NAMA Toxicology Committee and Professor Emeritus at The Evergreen State College in Olympia, WA. He is an environmental chemist who has taught chemistry, mycology, organic agriculture, and energy studies since 1971.

He has served as President of the Pacific Northwest Key Council, a group dedicated to writing macroscopic keys to the mushrooms of the Pacific Northwest. He has been active on the Education Committee of NAMA since the mid 1970s.

NAMA-affiliated clubs throughout the country use his numerous slide-tape programs on mushroom identification and on mushroom poisoning. His mushroom photography now appears in close to 30 books.

Puffballs, cont. from page 1

examining the spores microscopically. In the woods and shrub lands we were able to find two species of Lycoperdon: L. perlatum on the ground and relatively common in the grassy shrub areas, and L. pyriforme, frequent on decaying logs in the woodlands.

The most exciting find was encountered around the corral in the middle of the Cameron Ranch, where the cattle are gathered up. Here we found a much larger puffball, about 8 cm across. It had split open and at this stage of maturity was detached from the ground. Bovista spp. also become similarly detached and tend to blow along the ground in the wind. This specimen was much larger, and the skin was tough and leathery, about 2–3 mm thick. Inside were the remains of the spore mass, deep brown and hanging together in clumps. We were surprised to see the patches on the outer cover. It was new to all of us, and was certainly not the Giant Puffball, Calvatia gigantea.

We collected the specimen and soon were able to identify it as Mycenastrum corium, seldom reported in eastern Canada. It is more often found in western Canada, where it is reported as widespread but generally uncommon, but found around cattle or horse corrals. This is exactly where we found it!

Mycenastrum corium is in a family on its own, the Mycenaceae, which has only one species. It is attached to the ground by a “root” of hyphae, which on maturity becomes detached so that the fungus can roll in the wind. The outer skin is thin and soon wears away, leaving a patchwork of squares whiter against the darker inner skin, or endoperidium, that is leathery greyish-brown. The fungus breaks open into several pointed lobes to release the spores. The spores are globose, dark brown with rounded bumps over the surface. The spore

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Award for Contributions to Amateur Mycology

Nominations are now being accepted for the Award for Contributions to Amateur Mycology. This award is given annually to recognize a person who has contributed extraordinarily to the advancement of amateur mycology. Its recipients have often extensively conducted workshops, led forays, written or lectured widely about mushrooms and identifying mushrooms, all on a national or international level. Selection is made by a committee consisting of past award winners, and the award includes a plaque and lifetime membership in NAMA.

Nominations for this award should include a description of the accomplishments the nominee has made in the field of amateur mycology. Extensively conducting workshops, leading forays, writing or lecturing about mushrooms and identifying mushrooms, beyond the local club, are examples of such accomplishments. Previous nominees who were not selected to receive the award are still eligible for re-nomination.

Nominations should be sent to Gary Lincoff, 157 W. 95th St., Apt. 1A, New York, NY 10025-6653 no later than April 1, 2007.

To all NAMA members and NAMA affiliated clubs: Please look around you for people you think are deserving of one of the two NAMA Awards. You may believe that someone already has one of these Awards, but with only one Award a year in each category, and with no Award that need be given in any given year, very few of these have actually been awarded. If you think someone has already been nominated, think again. The NAMA Award for Contributions to Amateur Mycology has a five-year time limit. Anyone nominated through 2000 is no longer on the active ballot list and must be renominated to be reconsidered. The Knighton Service Award, because of the wording of the criteria for being considered for this award, has a three-year limit.

Please note that a person who has contributed mainly or exclusively in service to an affiliated club should be nominated for the Knighton Award rather than the Award for Contributions to Amateur Mycology, which is intended to recognize a broader range of activity.

Knighton Service Award

The North American Mycological Association is soliciting nominees for the Harry and Elsie Knighton Service Award, which was established by NAMA's Board of Trustees to recognize and encourage persons who have distinguished themselves in service to their local clubs. It is named for the Knightons because their efforts resulted in formation of the North American Mycological Association in 1967.

The annual award consists of a framed certificate; publicity for the winner and club in The Mycophile; a one-year membership in the organization; and registration, housing, and foray fees for the next annual NAMA Foray.

Each NAMA-affiliated mycological club may nominate one candidate who it feels has performed meritorious service during the current or preceding year. Normally, the president of the affiliated club makes the nomination (unless, the President is the nominee). Candidates need not be NAMA members. Selection of the recipient will be made by the three most recent recipients of the award.

Letters of support, photographs, clippings from newsletters, etc., may accompany the descriptions of the member’s contributions in service to the affiliated club.

Elsie Louise Knighton Remembered

Elsie Louise Knighton, 88, died Oct. 21, 2006 in Portsmouth, OH. A native of Portsmouth, she was born April 2, 1918, to Joseph Webb and Frances Mae Hudson Webb. Elsie was preceded in death by her husband Harry S. Knighton on May 26, 1999. Elsie and Harry, founder of NAMA, were very active members of NAMA and organized a number of annual Forays. Elsie was secretary of NAMA for many years.

—David L. Riepenhoff
P.O. Box 628, MS-2218
Piketon, OH 45661

It has also been brought to our attention that several other NAMA members have recently passed away, including Bob Spurgen, William Henry, Dr William Scott Chilton, Dr. C. Wayne Ellett, and Ruth Krasner. —Editor
Slide Contest Winners
for 2006
First Place:  
*Entomophthora* on a hoverfly by Lawrence Leonard ........................... A

Second Place:  
*Phragmidium* rust on blackberry by Lawrence Leonard ........................ B

Pictorial Limited

First Place:  
*Hypoxylon fragiforme* and Its Imperfect: *Nectria episphaeria*  
by Lawrence Leonard ........................................................................... C

Second Place:  
*Cribraria intricata* 8X by Lawrence Leonard ................................. D

Documentary Limited

First Place:  
*Leucocoprinus birnbaumii* by Walt Sturgeon ............................... H

Second Place:  
*Lactarius rubidus* by Ron Pastorino ............................................. J

Third Place:  
*Coprinus comatus* by Charles Fonaas ......................................... K

Honorable Mention:  
*Aleuria rhenana* by Ron Pastorino,  
*Phaeomarasmius erinaceellus* by Walt Sturgeon,  
*Polyporus alveolaris* by David Work,  
*Hygrocybe* sp. by David Work,  
*Omphalotus olearius* by Charles Fonaas

Documentary Open

First Place:  
*Leucocoprinus birnbaumii* by Walt Sturgeon ............................... H

Second Place:  
*Lactarius rubidus* by Ron Pastorino ............................................. J

Third Place:  
*Coprinus comatus* by Charles Fonaas ......................................... K

Honorable Mention:  
*Boletus parasiticus* by David Work,  
*Cortinarius limonius* by Noah Siegel,  
*Gymnopilus luteofolius* by Walt Sturgeon,  
*Gomphus clavatus* by Walt Sturgeon;  
*Clitocybe* by Charles Fonaas

Series

Winner: Lawrence Leonard  
*Gymnosporangium claviforme* on Juniper ........................................ L  
*Gymnosporangium claviforme* on Hawthorne ................................ M  
*Gymnosporangium claviforme* spermagonia .................................. N

Judges Option  
Gill/Pore Study of *Polyporus squamosus* by Charles Fonaas .......... O  
Pleasing Fungus Beetles by Noah Siegel ........................................ P  
“I’m All Ears” *Caloscypha fulgens* by Ron Pastorino ....................... Q  
*Laccaria* Gills by Walt Sturgeon ................................................... R

On the Internet: To view all the digital photos that won awards or honorable mention, go to http://photos.yahoo.com/namphocon and select the Photo Album entitled *06 Awards.*
Catalog of Educational Programs on Mushrooms and Other Fungi

Enrich your meetings and teaching sessions with NAMA slide and video programs. When ordering, please allow plenty of time for packing and shipping by our volunteer. All programs have written scripts, and most also include a narrative on audio cassette. The cassettes are not cued for automatic advance. Some programs are now on videotape.

To order: Write, call, or e-mail Carlene Skeffington, giving your name, street address (no P.O. boxes), date you need the program (allow time for previewing), alternative program choice, and phone number where you can be reached. If you wish a confirmation, please enclose a self-addressed postcard with correct postage.

Cost: These programs are available on loan to NAMA members and NAMA-affiliated clubs at no charge; but due to financial restraints, we are requesting voluntary contributions (suggested amount: $5 to $10 per program) to cover the costs of outgoing postage and upkeep. Checks should be made payable to NAMA and enclosed with the program return.

Non-members pay $20 per program; include with your order form a check made payable to NAMA.

After use, please return programs promptly via first class (i.e., priority) mail, insured for $50 per program. UPS or similar commercial carrier is fine, too, and usually includes up to $100 insurance. Please return the enclosed form or pertinent information so that we can verify your return of borrowed materials.

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Programs for Rent

Our programs are copyrighted and are not to be used for commercial purposes.

1. Diversity of the Mushroom World. Steve Trudell. 45 min. 138 slides. This is a beginners’ program. Lifestyles of mushrooms, where they live, and what they do, with emphasis on the variety of forms, colors, etc. No audio.

2. The Gilled Fungi: The Friesian Method of Classification. Dr. David Hosford & Kit Scates-Barnhart. 40 min. 79 slides. Explains and illustrates with diagrams the terminology and stature type of the Friesian system. This system has been in use for 150 years. Features identification without using a microscope.

3. Gilled Fungi: The Friesian Genera. Dr. David Hosford & Kit Scates-Barnhart. 60 min. 80 slides. For mushroom identification classes and advanced students. Demonstrates which genera of each spore color occur in each stature type and explains how to tell them apart. Most effective if used after program #2. Programs 4–11 are a series intended to help the student learn to identify a wide variety of common mushrooms, including edible and poisonous species. Program 4 should be viewed first, but the others can be used in any order.

4. Introduction to the Major Groups of Mushrooms. Dr. Michael Beug. 40 min. 80 slides. A general overview of mushroom identification, with music background. May be substituted for program 1. This is a new program and not a revision of #4.

5. Gilled Mushrooms I: White Spored. Dr. Michael Beug. 48 min. 80 slides. VHS video available. Includes Amanita, Lepiota, Hygrophorus, and Russula families.

6. Gilled Mushrooms II: White Spored. Dr. Michael Beug. 43 min. 80 slides. VHS video available. Includes Armillaria, Mycena, Flammulina, Collybia, Marasmius, Clitocybe, Laccaria, Lentinus, Pleurotus, and others.


9. Non-Gilled Mushrooms I. Dr. Michael Beug. 42 min. 80 slides. VHS video available. Chanterelles, boletes, hydnums, and polyposes.

10. Non-Gilled Mushrooms II. Dr. Michael Beug. 47 min. 80 slides. VHS video available. The clavarias and gasteromycetes including puffballs and bird’s nest fungi. Also the Hymenogastrales, the false puffballs.

11. Non-Gilled Mushrooms III. Dr. Michael Beug. 43 min. 80 slides. VHS video available. Ascomycetes and Heterobasidionymycetes. Includes morels, false morels, and jelly fungi; also discusses slime molds and other fungi.

12. Amanitas of the Pacific North West. Janet Lindgren. 32 min. 62 slides. An overview of some of the many Amanitas to be found in the Pacific Northwest. Includes a chart of the subgenera and sections of the genus Amanita. Reviewed by Dr. Rodham Tulloss.

13. Microscopy in the Study of Mushroom Spores. Dr. Leo J. Tanghe. 40 min. 79 slides. For general audiences. Clearly explains how to use a microscope and prepare slides for observation. Uses photomicrographs to explain the diversity and characteristics of spores for the accurate identification of mushrooms.
14. **The Ultrastructure and Diversity of Mushrooms.** Paul Stamets. 40 min. 74 slides. The scanning electron microscope reveals the three dimensional details of mushroom spores and tissues.

15. **Photographing Fungi.** Two parts. Harley Barnhart. 70 min. 156 slides. **Part I:** A basic treatment covering the choice of subjects, equipment and film characteristics, use of natural light, exposure, and composition. Suited for audiences with limited photographic skills. **Part II,** a more advanced treatment encompassing techniques for electronic flash and macrophotography (extreme close-ups).

16. **Poisonous and Hallucinogenic Mushrooms** (revised). Dr. Michael Beug. **Part I,** 35 minutes, 40 slides. **Part II,** 30 minutes, 40 slides. May be shown as one long program or two short ones. Includes a 23” x 37” wall chart, “Diagnosis and Treatment of Mushroom Poisoning,” by Kit Scates-Barnhart. Suitable for general audiences, students, or physicians. Explains the effects of ingesting toxic mushrooms. Covers toxin groups, their chemical compositions, and symptoms. Toxic species are described. *Available on the Web:* [http://www.evergreen.edu/user/library/tesce/mushroom/phm](http://www.evergreen.edu/user/library/tesce/mushroom/phm).

17. **Mushrooms: Macro to Micro.** Kim Emmons & Cara Styles. 50 min. 157 slides. Kim and Cara have created a fascinating mycophotographic journey from natural habitats to the microscopic world of fungi. Covers more than thirty species. A guided trip into the language of microscopy and the inner workings of fungi and slime molds. Appropriate for general audiences and mycology students.


19. **Mushrooms for Paper.** Copyright 1993, David Marks Productions. 10 min. VHS Video. A how-to-demonstration and a record of the opening night of the Exhibition of Mushrooms for Paper at the Mendocino Art Center in October, 1992. Useful for schools and other groups. Suggested for use in conjunction with program #18.

20. **A Guide to In-Camera Editing.** Copyright A First Generation Video Production. 20 min. VHS Video. Includes a pamphlet. A quick and easy way to edit as you go when taping speakers and documenting events.

21. **Morels, Truffles, and Other Spring Fungi.** Dr. Michael Beug. 40 min. 80 slides. VHS video available. Includes morels, false morels, cup fungi, truffles, false truffles, puffballs, earthballs, and gilled and pored mushrooms likely to be found in spring. *Available on the Web:* [http://www.evergreen.edu/user/library/tesce/mushroom/mtsmtsm.htm](http://www.evergreen.edu/user/library/tesce/mushroom/mtsmtsm.htm).

22. **Cooking with Hope.** Hope Miller. 58 slides. Audio tape not yet available. While traveling with her world-famous mycologist husband, Dr. Orson K. Miller, Jr., Hope had the time and supplies of mushrooms to experiment and developed many creative recipes and cooking techniques. She shares some of these with you.

23. **Mushrooms in Kansas.** Ron Meyers. 45 min., 80 slides. Covers some of the surprising diversity of mushrooms found in Kansas, many of which probably also are found in the other states of the Great Plains.

24. **Winning Slides from NAMA Photo Contests.** This is not a formal program, but we will assist you in obtaining some of our most beautiful slides for a discussion or delightful presentation of your own design. Call for more information.

25. **Introduction to Mushrooms.** Dr. Michael Beug. 50 min. 80 slides. An introductory program for all audiences that covers the most common edible and poisonous mushrooms as well as the best cultivated mushrooms. The program is intended to guide the viewer to the best edible species and away from the most dangerous species. While the emphasis is on mycophagy, attention is also paid to the role of mushrooms in the environment and in human attitudes. *Available on the Web:* [http://www.evergreen.edu/user/library/tesce/mushroom/introm](http://www.evergreen.edu/user/library/tesce/mushroom/introm).

26. **Introduction to Fall Mushrooms.** Dr. Michael Beug. 45 min. 80 slides. Focusses on the common basidiomycetes found during the fall season with comments about habitat and ease of identification. The mushrooms represented are from throughout North America with a slight bias towards the species found in the Pacific Northwest. *Available on the Web:* [http://www.evergreen.edu/user/library/tesce/mushroom/if](http://www.evergreen.edu/user/library/tesce/mushroom/if).

NEW Video Programs

Available to members and affiliated clubs for a period of two weeks **free of charge** except for return postage.

27. **A Walk in the Woods.** Dr. Samuel Ristich. A group of mushroomers are led on a walk in the woods with Sam as the leader.

28. **After the Ashes Cool: A Look at Post Fire Fungi.** Dr. Nancy Smith Weber. A thoroughly researched and informative slide lecture on the fungi that grow in forest burn sites. It was filmed at a meeting of the New Mexico Mycological Society.

29. **An Introduction to Mushrooming Basics.** Dianna Smith videotaped Don Shernoff and the Connecticut–Westchester Mycological Society on two fall walks as Don covers all the important aspects of mushrooming for beginners. He explains mushrooming in a serious, thoughtful, and intelligent manner and draws your interest as you follow him on the walk. Dianna produces videotapes on nature and gardening topics for a weekly cable TV program in New York. 1 hour. (Available for purchase—see page 13.)

Continued on page 12
NAMA Educational Materials, continued from page 11

NAMA Mushroom Teaching Kits

In addition to the NAMA Eastern Mushroom Teaching Kit, we are now offering a second Mushroom Teaching Kit with emphasis on the fungi of the Western section of the United States and Canada. Both of these programs are available for rental through our NAMA Education Section programs for grades K–8 (K–12).

The kits are a teaching tool for teachers, naturalists, and clubs, and for use at mushroom and garden fairs. The contents of the kits are similar, with some geographical variation in the slides, dried fungal material, and spore prints.

These kits provide

- Hands-on classroom aids
- Activity ideas that include artistic, cultural and scientific approaches to fungi
- Basic information necessary to teach grades K–8 about fungi. Basic information is divided into grades K–3 and 4–8. It can be used for a 45–60 minute lesson or over an extended period of time. It can also be adapted for use in grades 9–12.

The kits contain

- Lesson ideas and activities for grades K–12 relating to fungi
- Illustrations of fungi on 4" x 5" poster board
- 9 overhead transparencies illustrating basic mushroom anatomy, the variety of shapes and spore-bearing surfaces of fungi, and fungi ecology
- Laminated spore prints
- Mycological Society of America’s “What You Can Do with Mycology” posters on the subject of careers in mycology
- NAMA poster on mushroom poisoning
- 35mm slides of different fungi
- 25 plastic hand lenses
- Dried fungi samples
- Foam blocks and skewers (to mount fresh specimens for drawing in the classroom)
- Large magnifying glass on a stand
- “MykoCD” from MykoWeb
- 2 videos on the growth of slime molds
- Taylor Lockwood’s DVD of his “Treasures of the Fungi Kingdom” shows
- Teaching materials developed by Dr. Walter Sundberg
- Wool samples made with fungal dyes and “Fungal Elf,” all by Sue Hopkins

- Books: Katya Arnold and Sam Swope, Katya’s Book of Mushrooms; David Arora and Jeannette Bowers, Mushrooms of the World Coloring Book; Emily Johnson, North American Mushroom Photo Postcards; Bryce Kendrick, A Young Person’s Guide to the Fungi; Nancy Parker, A New Home for ‘Lil Gnome

Kit Rental Information

The rental fee for each program for NAMA members and affiliated clubs is $40; for non-members the fee is $50. The program is the property of the authors and of NAMA and is not to be copied or used for commercial purposes. We encourage nonmembers to join NAMA in order to rent our programs at the member rates. The renter will pay return postage and $100 insurance. Send a request to rent the kit for one week to ten days, together with a check or money order made out to NAMA, to

Eastern Mushroom Teaching Kit
Carol Dreiling
380 Curtis Parker Road
Alexander, NC 28701-9667
(828) 683-8678
caroldrei@aol.com / (828) 254-6199

Western Mushroom Teaching Kit
Maggie Rogers
1943 SE Locust Ave.
Portland, OR 97214-4826
(503) 239-4321

Acknowledgments: Many thanks to NAMA members who contributed to the contents of the kits: Dean Abel, Carol Dreiling, Louise and Bill Freedman, Catharine Gunderson, Susan Hopkins, Emily Johnson, Taylor Lockwood, Theresa Oursler, Nancy Parker, Samuel Ristich, Maggie Rogers, Sandy Sheine, Allein Stanley, Walt Sundberg, Mike Wood. If you would like to add items to the Mushroom Teaching Kits, please send them to Carol Dreiling or Catharine Gunderson. We would like objects such as dried fungi, spore prints, books, videos, and other teaching materials.

NAMA Mushroom Trunk*

We are offering a new program for rent, in the form of a kit for teaching about mushrooms for grades K–8.

The Mushroom Trunk provides

- Hands-on classroom aids
- Activity ideas which include artistic, cultural and scientific approaches to fungi
- The basic information necessary to teach grades K–8 about fungi. Basic information is divided into grades K–3 and 4–8. It can be used for a 45–60 minute lesson or over an extended period of time. It can also be adapted for use in grades 9–12.
Programs for Sale

Diagnosis and Treatment of Mushroom Poisoning. Kit Scates-Barnhart. Poster, 24 in. x 36 in. An excellent gift for clubs to give to hospitals and clinics. It is an important addition to any club’s educational resources. Make check for $24.95 + $4.50 shipping and handling payable to Fungal Cave Books 1943 S.E. Locust Ave. Portland OR 97214-4826

Pronouncing Names of Fungi. Cassette tape and script. Features the recorded voices of Dr. Alexander H. Smith and Dr. Rolf Singer. Side One contains Dr. Smith giving American pronunciations while Side Two has Dr. Singer with the European pronunciations. Helps you decide which pronunciations your friends will prefer! Make check for $7.75 payable to NAMA Education Committee and mail to NAMA Pronouncing Tape 1943 SE Locust Ave. Portland OR 97214-4826

Slime Molds I, II, & III. These three historic films have been collected on one video, running about 65 minutes. The color films were prepared by James Koevenig in 1961 at the University of Iowa under the direction of C. J. Alexopoulos, G. W. Martin, and R. T. Porter. The video uses live-action and time-lapse photography, photomicrography, and animation to teach about the fascinating world of myxomycetes. Tapes will be prepared as individual orders are received, so allow extra time. Cost per tape is $29.95 + $5.00 shipping and handling ($7.00 s/h overseas). The regular tape is in NTSC format (for North America) but is available in SECAM (France and others) or PAL (Spain, Germany, and others) by special order. Specify the required format and send check or money order for $46.95 (shipping included), payable to NAMA, to Dean Abel Biological Sciences 138 BB University of Iowa Iowa City, IA 52242

The Mushroom Trunk contains
- Lesson ideas and activities for grades K-12 relating to fungi
- Illustrations of fungi on 4”x5” poster board
- 9 overhead transparencies illustrating basic mushroom anatomy, the variety of shapes and spore-bearing surfaces of fungi, and fungi ecology
- 16 laminated spore prints
- 3 posters: Mycological Society of America “What You Can Do with Mycology”
- 2 NAMA posters on mushroom poisoning
- 26 slides of different fungi (35mm)
- 25 plastic hand lenses
- 13 dried fungi samples
- Foam blocks and skewers (to mount fresh specimens for drawing in the classroom)
- A copy of Emily Johnson’s “North American Mushroom Photos Postcards”

The rental fee for this program is $40 for NAMA members and $50 for non-members. Return postage and $100 insurance will be paid by the renter. Send a request for renting the program for one week, together with a check or money order made out to NAMA, to Carol Dreiling 380 Curtis Parker Road Alexander, NC 28701-9667 (828) 683-8678 caroldrei@aol.com / (828) 254-6199

The program was developed by Theresa Oursler, with the help and major contributions from Carol Dreiling, Louise Freedman, Samuel Ristich, Sandy Sheine, and Aileen Stanley. The program is the property of the author and of NAMA and is not to be copied or used for commercial purposes. We encourage nonmembers to join NAMA in order to rent our programs at the member rates.

Notes: If you know of a slide, audio or video production that should become a part of this NAMA service, please contact Sandy Sheine, Education Committee Chair, P.O. Box 81640, Rochester, MI 48308, (248) 652-9498, <ssheine@aol.com>. * As the issue was going to press we learned that the Mushroom Trunk items are now combined in the Mushroom Teaching Kits and it was too late to change. Sorry!

Here’s the latest news from Taylor Lockwood:

Check out the mushroom video shorts on his Web site. There are trailers for “Trilogy” and “Treasures . . .” DVDs, one called “The Secret Mushroom Garden,” and a new project called “The Mushroom Minute.” They are Flash videos so almost everyone should be able to view them. Your comments are always appreciated!

Taylor will post more in the future at www.kingdomoffungi.com/b.video.pages/V.Index.php. His other sites are www.taylorlockwood.com (personal), www.kingdomoffungi.com (store), and www.fungiphoto.com (catalog).

Also, Mushroom Mousepads have just arrived at www.kingdomoffungi.com/a.pages/mp_a.php featuring one of Taylor’s favorite illustrations, “Close Encounters of the Fungal Kind.” They look great, work great, and are just in time for the holiday season. Happy Holidays from Taylor Lockwood!
2007 NAMA Photo Contest Entry Form

Name: 

Last First Middle Initial

Address: 

Phone: ( -   -   -   )  E-mail: < > 

By entering a photograph in this contest, the photographer gives permission for that photo to be reproduced and used by the members and delegates of The North American Mycological Association for educational purposes, and not for the collection of royalties. Except for this stated permission, all other benefits of copyright, including, but not limited to, the right to collect royalties and/or profits from the use, publication, or sale of the photo, remain with the photographer. Persons wishing to publish that photo in any book, periodical, calendar, or other form of profit-making venture, must contact the photographer to negotiate permission, royalties, or sale price.

Signature Date

| D | 1 |
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| J | 7 |
| J | 8 |
| J | 9 |
| P | 10 |
| P | 11 |
| P | 12 |
| P | 13 |
| P | 14 |
| P | 15 |

CATEGORIES

Documentary: Images suitable to identify the fungus or myxomycete to genus and species in a guide book.

Judges Option: Pictures that don’t fit either of the other two categorie, e.g. people, humor, etc.

Pictorial: Beautiful pictures of fungi or myxomycetes suitable for a calendar, poster, or coffee table book.

Your $4 fee allows you to enter up to 15 images in either the film or the digital contest. Please enter the titles of your photos on the lines above.

INSTRUCTIONS FOR SUBMISSION

Entry Fees:

- $4.00 for Film Contest
- $4.00 for Digital Contest

Total enclosed: $_____________

FILM: Mail color slides, entry forms, and entry fees (check payable to NAMA) to:

John Plischke III
201 Culbertson Ave
Greensburg PA 15601
(724) 832-0271
<fungi01@aol.com>

DIGITAL: Mail files on CD disk, entry forms, and entry fees (check payable to “NAMA”) to:

Damian R. Pieper
35 Ventura AV
Iowa City, IA 52245-1638
<NamPhoCon@yahoo.com>
Annual Photo Contest Rules

1. The **Documentary** image must include at least one specimen in situ, i.e., not moved from its original location or altered in any way, except for the removal of detritus or soil that obscures the view of the subject.

2. The photo must include half of a specimen that has been carefully sliced from top to bottom with a plain sharp knife or razor blade. A horizontal section should also be included if it is necessary to exhibit some character such as a hollow/solid/stuffed stipe or other interior structure.

3. If a spore print is useful in the identification of the species, that must also be set somewhere in the frame. The spore print may be omitted if the spore color is already clearly evident somewhere in the frame, or if you attach notes describing the spore color with any standardized color chart or system.

4. For fungi and myxomycetes which change color with development, age, bruising, etc., a shot of the same specimen in each color stage must be included somewhere in the frame.

Images may originate from any flatbed scan, any kind of film, Polaroid, or other digital source. Photographers are encouraged to use any available methods, including computer programs, to correct an inappropriate color balance, over- or underexposure, crop, assemble several images into one frame, etc.

The contest director requests that you create and use a file name for each entry in this form:

- Entry letter & number matching the one on your entry blank
- Genus and species (optional but very helpful)
- Photographers full name or first, middle, and last initials in capitals
- File extension

For example: D3 Biscogniauxia atropunctata by Johnathan E. Smitherbergmann.jpg

Any NAMA member may enter the contest. You may enter up to 15 images in each contest. Use two entry forms if you enter both the digital and the film contests.

All entries must be received by May 15, 2007.

Dick Dougall Wins Knighton Award

The 2005 recipient of the Harry and Elsie Knighton Service Award is Dick Dougall of the Western Pennsylvania Mushroom Club. Congratulations Dick! Your club has become a mycological powerhouse in the East, in large part because of you.

In 2005 mushroom clubs in the Northeast, Midwest, and on the West Coast nominated eight individuals, each of whom was worthy of receiving this year’s award.

This year’s winner appeared on the ballots of all three judges. He has distinguished himself in every facet of his club’s activity, from presenting programs to being program chair, to being the president of the club, to writing articles for the club’s newsletter and being proofreader of the club’s newsletter, as well as chair of the club’s large annual foray, which comprises dozens of jobs that must be successfully delegated to others or done by the chair. He is everywhere, doing everything, and making it all seem effortless. Dick serves as a model for others.

Fungi in the News, cont. from p. 5

the journal *Nature* (443: 818–22). This blockbuster paper stems from a massive ongoing project called Assembling the Fungal Tree of Life (AFTOL), which is part of an even bigger project to assemble an evolutionary tree for all life on the planet. The mycologists seem to be way out in front of almost all the other groups—hurray! I won’t take up any space here to describe the findings of the study; you can see them for yourself online or in the printed version of the journal. Plus, I’m certain that Else will do a stellar job in her annual literature review in the upcoming spring 2007 issue of our own journal *McIlvainea*. See you then!

Puffballs, cont. from p. 6

mass is held in a network of fine branched threads called capillitium which expand and contract with the changing humidity releasing the spores. The specimen we collected was photographed, documented, and forwarded to the mycological herbarium in Ottawa.

[John Sparling is Vice-President of the Mycological Society of Toronto. This article first appeared in the April–June ’06 issue of the Toronto club’s newsletter, Mycelium, and was reprinted here with permission of the author.]
Mushroom of the Month

The Blewit (*Lepista nuda*), a choice edible. To find out more about mushroom identification, check out NAMA's educational offerings listed in this issue. Photo courtesy of J. N. Dell.