LONG ISLAND MYCOLOGICAL CLUB

http://limyco.org

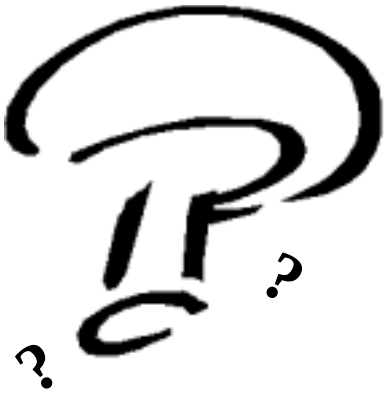
L.I. SPOREPRINT

VOLUME 12, NUMBER 2, SUMMER, 2004

Poetry: Mushroom Study

By: Mrs. Morton A. Gibbs; San Francisco, California
(Reprinted from Glenn Freeman's "Introductory Mushroom Microscopy")

First, you name its habitat:
Woods or pastures, hill or flat –
Under just what trees it grows,
(If a preference it shows?)
Is it single, cespitose,



Or
gregarious and close?
Next, its pileus, or cap,
All these features you must map –
Color, texture, size and shape,
Nothing must your eye escape.
Is its margin involute?
And in age does it upshoot?
Is it glabrous (smooth) or not.
Viscid (sticky) or somewhat?
Does its color change when bruised
To pink or black or lovely blues?
Then the lamellae you take,
(Saying "gills" is a mistake)
Color, shape, and size of them.

(Continued on page 7)

Tracing the Roots of Mushroom Cultivation

by Dr. Kelly Ivors (kivors@nature.berkeley.edu)

Reprinted from *Mycena News*, newsletter of the San Francisco Mycological Society, text & photos courtesy of the author.

The consumption of mushrooms by man predates recorded history. Historical data indicates mushroom cultivation and consumption occurred in ancient civilizations of China, Rome, Greece, Egypt and Central America. In fact, Asian civilizations have been cultivating edible mushrooms for almost 1400 years, since the first mushroom, *Auricularia auricula* (wood ear), was cultivated in China around 600 A.D. Soon to follow were *Flammulina velutipes* (enokitake) around 800-900 A.D., *Lentinula edodes* (shiitake) around 1000-1100, *Agaricus bisporus* (button) around 1600, *Volvariella volvacea* (paddy straw) around 1700, *Tremella fuciformis* (white jelly) around 1800, and *Pleurotus ostreatus* (oyster) around 1900. Of the leading mushrooms today that were cultivated before 1900, *Agaricus* is the only one that was not first grown in China.

Button mushrooms growing in limestone caves at Moonlight Mushrooms farm, PA.*(Photo courtesy of Dr. K.*

Wu San Kwung is known both by legend and historical account as the originator of shiitake mushroom cultivation. He was born during the Sung Dynasty (960-1127) in the Chekiang Providence of China. Legend states that Wu San Kwung stayed deep in the forests of the high mountains where he hunted and collected wild mushrooms for food. One day he discovered that certain broken trees, which had fallen to the ground, produced mushrooms. Later he used a knife to cut the logs and noticed "the more cuts, the more mushrooms. No cut, no

(Continued on page 6)

PRESIDENT'S MESSAGE

So far, the start of the mushroom season has been disappointing, with very few morels or many edibles. Some oysters and winecaps made everyone happy but other than that, there hasn't been much out there. Everything seems to be "off." Let's hope things will pick up shortly.

As in past years, some people brought excess plants to our first Bethpage foray. (I've received many plants over the years and always think of the donors (of perennials) every time I see or use them. The annuals always taste extra good too. Maybe we should make this a tradition and if we have extras just bring them on that day. What do you think?

The club is in need of a volunteer to be species recorder, someone who attends most of the forays and would check off each species found, but not be responsible for identification. This is a great learning experience for anyone unsure of Latin pronunciation! (The Species Recorder is also a member of the board.) The lists would then be forwarded to our editor for a complete record of the year. If no one volunteers, the next option would be for the foray leader to either keep a record or ask someone to volunteer. This data is very important as a tool for future prospects and learning for all members.

One more thing that I would like to address is etiquette at a foray. If you wish go off on your own, kindly let the leader know that you are doing so. This also pertains to leaving early. We don't want anyone getting lost or to lose time by looking for them. Also, should you find a specimen, kindly wait to pick it until everyone gets to see it (or photograph it) in situ. In addition, for all the new members: we share edibles, whenever there are enough, found on forays. The exception is for morels in spring.

Hope to see you all soon!

EDITOR'S NOTE

Summer has now officially arrived, and many of our scheduled forays during July and August are considered "optional" in that dry weather then depresses mushroom fruiting considerably. Although we had hoped to have a message center on our website by now, this has not yet been accomplished, so we will continue to rely on email to alert members of adverse conditions and cancellations. Otherwise, use your own judgement or call the walk leader if you are unsure about attending. **Walk leaders are encouraged to reconnoiter the foray area prior to a scheduled foray.**

We also remind you that if you have web access, our foray schedule is available online to members only. If you don't have the password, email me to obtain it. Lastly, several of our forays will be on NYSDEC land, and if you think you might attend, complete the permit application included with this issue and mail it in. (Check off "hiking" under desired activity.) We are encouraging this due to a heightened presence of DEC officers in these areas, who have been ticketing vehicles without permits.

MATERIAL FOR THE AUTUMN, 2004 EDITION SHOULD REACH THE EDITOR BY AUGUST 30TH

(Submissions should preferably be typed or submitted in Rich Text Format on PC floppy disk or by e-mail)

LONG ISLAND MYCOLOGICAL CLUB

President: Peggy Horman
Treasurer & Membership Secretary: Peggy Horman
(631) 744-4965 e-mail: owls2@optonline.net
Recording Secretary: Monique Dussault
Foray Chairman: Jacques Brochard
Species Recorder: Position Open
Webmaster: Dale Robins

Sporeprint Editor: Joel Horman
11Ramblewood Rd., Ridge, NY 11961
Tel: (631) 744-4965
e-mail: jlhorman@optonline.net
Editorial Ass't: Peggy Horman
Board Members: Rita Blinderman, Rosario Censi, Paul Fox, Leonard Schecter.

LIVING TOGETHER: HOW TREES BENEFIT FROM PARASITICAL FUNGI

(from "The Private Lives of Plants", 1995, Princeton U. Press, by David Attenborough)

Surprising though it may seem, plants form partnerships with fungi. Fungi, after all, are normally seen as the enemies of plants, not only destroying their bodies when they are dead, but battening upon them while they are alive and hastening their end. The appearance of a bracket fungus*, spreading its great plates horizontally from the trunk of an aged oak, is often regarded as a sign that the old tree will not live for much longer. In fact, the fungus could well be the tree's saviour and enable its host to live longer than it would do otherwise.

Meripilus sumstinei, US congenor of *M. giganteus.*

The bulk of the trunk of a mature oak, like that of any tree, is dead. Its living region is a relatively narrow band just beneath the bark. The cells on the inside of the band steadily develop into rigid thick tissues, so increasing the trunk's girth. As it ages, this material eventually forms the solid timber pillar in the heart of the tree. This provides support for the branches which keep the leaves within the reach of sunlight. But the central pillar is dead tissue. Producing it took a great deal of the oak's resources over its long life. The oak, by itself, cannot recover that investment. Its only chance of doing so is with the help of fungi. A single spore of a bracket fungus, as small as a particle of dust and carried on the wind, may enter a tree through a wound in its bark. It develops into a thread which moves from fibre to fibre through the layer of living sapwood beneath the bark and then into the timber beyond. Once there, it begins to proliferate. Some kinds feed only on the colourless cellulose of the cell walls. Others are also capable of digesting lignin, the hard brown substance that a tree deposits within the cells that make up its timber. Many will remain dormant for years until the tree in which they are living is weakened by age. Perhaps it is struck by lightning. Maybe it loses a branch in a gale. Then the fungal threads begin to multiply prodigiously. They spread so fast and feed so effectively that the centre of the old tree starts to disintegrate. It is only at this stage that we are likely to be aware of the presence of the fungus, for now its fruiting body begins to sprout from the side of the tree. This is a huge brownish structure like one or more rounded shelves, sometimes two or even three feet across. At certain times of the year, pores fall from tiny holes on the underside of these shelves and do so in immense numbers. A big bracket fungus is estimated to produce twenty million spores every minute and it may continue to do so for five months. If the sun is shining from behind, the microscopic spores catch the light and look like smoke so that the bracket seems to be smouldering. Because this first visible sign of the fungus only appears when the tree is elderly or already stricken, it is usually assumed that it is the fungus that has infected the tree like a disease and is bringing about its death. But that is hardly just. The fungus has not attacked the living tissues of the tree, only the dead timber. And now, far from harming the tree, it brings it considerable advantages. To start with, the remains of the wood, after the fungus has digested it, are in a form that the tree can absorb. So as this rotted pulp accumulates on the ground within the hollowed trunk, the oak puts out small roots into what was once its centre to reclaim some part of its lifetime savings. And there is new valuable nutriment there too. The hollow trunk has become an attractive home for animals. Bats roost in it, hanging from its walls. Owls nest there. And droppings from these creatures fall on to the ground within and provide further rich sustenance for the tree. The removal of the tree's dead heart brings yet another advantage. The change of form from solid pillar to hollow cylinder alters the way in which the trunk reacts to mechanical stress. It is much more resilient and stable. The removal of many tons of timber

(Continued on page 4)

** (Here Attenborough is speaking of Meripilus giganteus, although his observations apply to any bracket fungus, or parasitic polypore.)*

Foraging far afield: Pennsylvania Morels

by Doris Fleischer

The weekend weather forecast was not good, rain starting in western PA going east. Just our luck!! Phil and I decided we were going to take John and Becky Plischke up on their invitation (see last issue of LI Sporeprint) anyway and proceeded to pack our raingear. Becky was extremely helpful in sending us information on motel accommodations and directions to the park.

After a very relaxing and picturesque drive from Long Island, NY through PA we arrived in Washington County just before dusk on Friday, April 23rd checking into a Best Western just a few miles from the park. Early the next morning we hurried over to the park anxious to meet the Plischke's and scope out the area. Upon checking in and registering we were met by the club's Vice President, Glenn Carr and his wife, Gay. When we learned that they were headed to search out an area that had been good the previous year, we asked if we could join them. After a couple of hours hiking up some very steep hills, Phil found some large Dryad Saddles. Following that, Glenn found several Devil's Urns, *"Urnula craterium"* and some more Saddles. Next, I found my first yellow morel buried in leaves beneath a large elm. We all continued digging in the leaves around the tree and Phil found a second morel, a black one! I started digging more furiously and found five more black Morels! We did not find any more morels that day but considered ourselves very fortunate to have found some.

We all returned back to Shelter 6 at 5 PM for show and identification. Although there was not an abundance of Morels compared to last year, there were many different kinds of mushrooms on display, some edible and some poisonous. After dinner, we returned to the shelter for an extremely well done slide presentation by John and John Plischke III . A lively group of approximately 75 people attended. The presentation was very informative and enjoyable. We ended the day by the evening campfire. Luckily, the rain showers did not arrive until later that evening.

We are very grateful for the hospitality extended to us. The knowledge we gained and the friendships we made were well worth the long trip. And by the way, the morel steak sauce the next evening and the morel egg omelet the following day reminded us all over again of our wonderful trip.

NEMF 2004 FORMS AVAILABLE

All LIMC members with web access have received notice that application forms to the NEMF 2004 foray in New Hampshire Sept. 9-12 are available at their website. If you are interested in attending and lack web access, contact the editor and we will mail the printed forms to you.

Trees benefit: ***(Continued from page 3)***

also reduces the strain on the tree's elderly and doubtless somewhat decayed root system. The result is that an old hollow tree is often able to withstand a gale better than a younger undecayed one. In the ancient hunting parks of England such as Windsor, where trees stand out in the open, unprotected by others from the wind, it is by no means rare after a storm to discover that hollow oaks, four or five hundred years old, remain upright when younger ones, a quarter their age, have been blown over. Tree and fungus, each pursuing its own best interests, have come together to the benefit of both. It is a most fortunate conjunction. It probably started relatively recently in the history of both species, but it now happens so frequently that it could almost - if not quite - be called a real and regular partnership.

(*Next issue-A real partnership:* ***Mycorrhizal mushrooms.****)*

FORAY RESULTS

Wellwyn: The first two morel forays were singularly unproductive, with none found on 4-24 and only 6 on 5-1, compared with 47 last year.

Bethpage: This is our annual *Pleurotus populinus* hunt, some years producing tens of lbs., but next to nothing on 5-8, other than a plenitude of *Pholiota veris* (inedible).

Planting Fields 5-15: Good amounts of *Stropharia ruggosoannulata* and *Agrocybe praecox*, both of which are edible. Also found were several Pezizas and *Volvariella speciosa*.

Bethpage 5-22: Finally, on our return trip , oysters were present in good amounts, as was *Megacollybia plattyphyla*, enough for all. Additonal finds were *Galerina autumnalis*, a toxic species, *Coprinus micaceus, Psathyrella velutina,* and more *Pholiota veris.*

Muttontown 5-29: 22 Species incl. *Tremella lutescens*, newly recorded.

Massapequa 6-5: Very little but one species new to the list, *Russula stricta.*

Gleanings

■ **FERMENTED CATERPILLAR FUNGUS, ANYONE?** You may recognize that odd term as the popular name for species of *Cordyceps,* an Ascomycete parasitic on insects and underground truffles. It came to world attention in 1993, when the Chinese women's Olympic track team turned in several new records which were viewed with suspicion, but which were later attributed to their use of a tonic made from "caterpillar fungus". A fermentation made from this mushroom, *Cordyceps sinensis,* has now been marketed under the trade name "CordyMax", and a paper extolling its virtues was presented at the American Physiological Society's annual scientific conference. This was a clinical trial with a double-blind, randomized, placebo controlled design of 131 healthy, sedentary males and females age 40-70. The 12 week trials found significant enhancement in aerobic capability, endurance performance, and exercise metabolism. Since this research was apparently company sponsored, the final verdict is not yet in. *(Biotech Week - May 12, 2004 -)*

■ **SUDDEN OAK DEATH REACHES NJ:** The Atlantic City Press reports that Sudden Oak Death, aka *Phytophora ramorum*, has been found in a nursery in Cape May, NJ. This pathogen, which has caused the deaths of thousands of black oaks, tanoaks, and coast live oak trees in California, has now spread to the east coast, where it has also been found in Maryland and Pennsylvania. It is not yet known how susceptible eastern oak tree varieties are to this fungus.

■ **PARTNERSHIP OR TRIUMVIRATE?** We have all become aware of the significant benefits most plants derive from their symbiotic partnership with fungi, both external and internal. Recent research shows the picture is even more complicated, with a third entity sometimes involved. Called a mycorrhiza helper bacterium (MHB), *Pseudomonas monteilii,* was shown to enhance both ectomycorrhizal and endomycorrhizal symbiosis of Australian Acacia species. The stimulating effect was noted with both associated *Pisolithus* and *Scleroderma* species as well as the endomycorrhizal *Glomus intraradices.* The authors theorize that MHB chemically stimulated fungal growth, although this could not be demonstrated under aseptic conditions for *Scleroderma. (Mycorrhiza, 2003 Apr;13(2):85-91)*

(Compiled by editor from various sources.)

Chanterelle Schnapps Meinhard Moser

(from "A Field Guide to Mushrooms NA", by Kent & Vera McKnight)

With Chanterelle season fast approaching, this is a timely recipe, and one we can personally recommend highly. ED.

Amber in color, ambrosial in taste, the original Austrian recipe for this intriguing drink calls for schnapps made from rye. Vodka, also colorless and unsweetened, is a very satisfactory substitute, according to Dr. Moser. The spiked chanterelles are a welcome bonus that makes an unusual, attractive, and tasty cocktail snack.

1 pint fresh golden chanterelle mushrooms*
1 fifth vodka or unflavored schnapps

***** Substitute: Dried chanterelles (1/2 cup), usually unsatisfactory for culinary purposes, work well in this recipe.

Wash the fresh mushrooms under cold running water and drain on paper towels. Dehydrate them at 105^0 in a dehydrator, in the sun, or over a light bulb, **until completely dry, as wet chanterelles will make the vodka cloudy.** Crumble the dried mushrooms into a large, wide-mouthed jar. Add the vodka, reserving the empty bottle. Soak off the label and replace it with one of your own.

After 2 days, strain the golden liquid back into the bottle.

CORRECTION TO FORAY DIRECTIONS for ROCKY POINT PRESERVE

The Burger King referred to in the "Direction To Foray Sites" has been closed. The structure is still there, but the Burger King sign has been removed. Instead, make the U turn just past Waldbaum's if approaching from the east. Again, it is recommended that attendees to this foray obtain a DEC permit and an application form is included in this issue. (See editor's note.)

MUSHROOM CULTIVATION *(Cont from p. 1)*

mushrooms." Occasionally after cutting, no mushrooms appeared for years. When this happened, he became angry and beat the logs vigorously. Several days after the beating, mushrooms flushed from the log. This story is perhaps the possible origin of the practice of cutting and beating logs for shiitake production.

However, it wasn't until the 17th century in France that commercial mushroom growing began. By coincidence, farmers observed crops of *Agaricus* growing in melon beds fertilized with horse manure, and later confirmed that horse dung was closely associated with growth of the button mushroom. In 1630, the first attempt at indoor *Agaricus* cultivation occurred near Paris in Chambry, France in caves (limestone quarries) where they produced "champignons de Paris". Some accounts report that King Louis XIV (1643-1715) was among the original European mushroom growers. It wasn't until the 19th century that modern cultivation techniques were formed and then passed onto gardeners in England. *Agaricus* cultivation in caves spread quickly throughout Europe, reaching Belgium, Holland and Scotland.

Mushroom mine in Scotland (late 19th / early 20th century.

In the late 19th century (1880), mushroom production made its way across the Atlantic to the United States, where curious home gardeners near New York city and Long Island tried their luck at growing this new and unknown crop in caves and cellars. In 1891, William Falconer published the first book on mushroom cultivation entitled "Mushrooms: How to Grow Them; A Practical Treatise on Mushroom Culture for Profit and Pleasure" (available at http://cdl.library.cornell.edu/cgi-bin/chla/chla-cgi?notisid=AAM1556). Falconer suggested that mushroom growing was perfect for florists; since they grew flowers on benches, mushroom beds could be placed under bench tops and the 2 crops could be grown at once. Mushroom cultivation was also recommended to housewives as a source of additional income. In 1896, William Swayne of Kennett Square, PA built the first mushroom "house" used exclusively for commercial mushroom production. Houses were used to control precise environmental conditions required for cultivation.

Growers had to depend on spawn imported from England, which by the time it reached the U. S. was of poor quality. In 1903, two scientists at the US Department of Agriculture were successful at producing pure-culture spawn of *Agaricus bisporus*. The first manufacturer of spawn was the American Spawn Company of St. Paul, Minnesota, headed by the French mycologist Louis Lambert. He began the production of brick spawn, advertised as "Lambert's Pure Culture Spawn", which later received a silver medal at the Universal Exposition in St. Louis in 1904. Ten years after this development, at least 4 - 5 million pounds of *Agaricus* were grown annually in the U.S. Strains of this species were naturally brown in color; it wasn't until the mid 1900s that snow-white strains of the button mushroom were first observed and isolated from growing beds. At current, white button mushrooms dominate the industry, mainly for aesthetic reasons, as well as having a longer shelf-life.

With the advancement of air conditioning and improvement of environmentally controlled mushroom houses (1930), cave cultivation almost disappeared. Today, only a handful of growers operate underground around the world, including the 'Moonlight Mushroom' farm in southwestern Pennsylvania, which consists of a 150-mile labyrinth of tunnels 300 feet underground. Although *Agaricus bisporus* currently accounts for approximately 90% of the total mushroom production in the US, additional technological breakthroughs have encouraged the commercial cultivation of other types, including *Lentinula*, *Flammulina*, *Pleurotus*, *Hypsizygus*, *Hericium*, *Morchella*, and *Grifola*. Today, Pennsylvania leads the country in total annual production (>50%), with California a strong second. More than 20 other states now add significantly to total production. This means that mushrooms, which have limited shelf life and shipping range, are available everywhere!

References

Chang, S.T. and Miles, P.G. 1987. Historical record of the early cultivation of *Lentinus* in China. Mush. J. Tropics 7:31-37.

Del Sordo, S.G. First fifty years: A chronological history of the mushroom industry

Fungal Funnies

(Contributed by Ruth Davis, unless otherwise noted.)

- As dumb as a puffball.

- Not only can eating Helvella/Gyromitra be detrimental to your health, it is also im**morel.**

- No mushroom is poisonous until you eat it.

- Fruiting body of certain species of Coprinus = basidiocrap.

- Joe: You see that man over there? He thinks in terms of millions.
Moe: He doesn't look like a banker to me.
Joe- He isn't; he's a yeast geneticist.

- The new combination bowling alley/ restaurant: bolete.

- And then there was the man who acquired a fortune from edible mushrooms……at least his wealthy relative thought that they were edible.

- Said Mucor to Pilobolus: "You're always losing you head over a pile of feces."

- Birds' nest fungi—moldy Chinese soup.

- That Irish mycologist, Mike 0'Toxin.

- What did the parrot say when asked why he lived in a tree? "Polly poor."

- Why was enrollment so low in your ecology lab course this semester?
Because of the hyphae (high fee).

- One mycologist, when demonstrating a specimen of a lichen which is used as a spice in India, points out that if you used this in a sauce for basting roast chicken, it would make the chicken finger-lichen good.

- Several mycologists' labs have been referred to as the "best little spore house in Texas."

- What would happen if the 12th letter of the the alphabet were deleted?
There would be no moreL.

- I know a mycologist who always won at poker because he Hydnaceae up his sleeve.

- Which room has no doors, windows, floor or ceiling?
Answer: a Mushroom!
(*contributed by Shelly Katz.)*

- An arrogant fool from Muscongus,
Claim'd he knew all about fungus.
I need no advice, I eat what looks nice.
So now he's no longer among us.
(*Dmitri Stancioff, reprinted from "Mainely Mushrooms", April, 2004)*

WELCOME, NEW MEMBERS

Boris Pritychenko

Galina & Victor Romanov

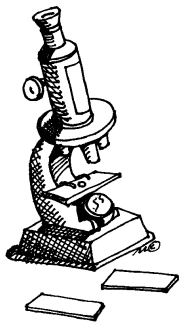
Michael J & Nadia Z Strenk

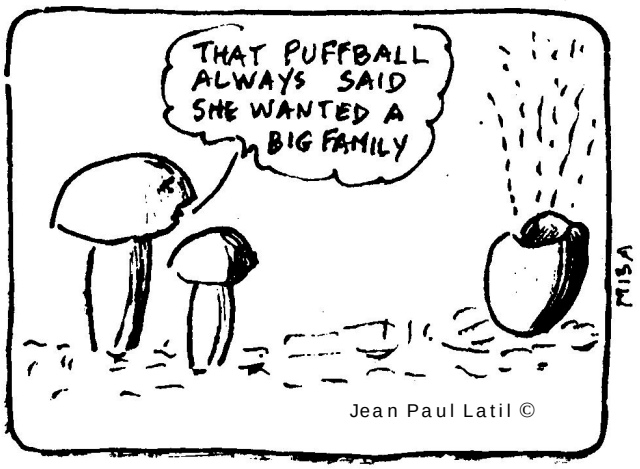
Edward & Mari Wildermuth

Mushrooom Study

(Continued from page 1)

Grown to, or quite free from stem?
(But this stem you must call "stipe")
Tell unerringly its type.
(What you never, never do
When picking, is to cut it through)
You must have the whole of it
Or descriptions will not fit.
Is it bulbous, is it thin,
Hollow, or with stuff within?
Has it scales or annulus
(that's the ring, contrarious,
for it makes you want to swear
it so often isn't there)
Next a spore-print must be made,
Note each slightest tinge or shade.
Lilac may as white be classed,
Cream, as ochre-spored, alas!
This requires a microscope,
Or with spores you cannot cope.
Size and shape again you note,
Tho' they're tiny as a mote.
Last, you take your books, a lot –
One may give it - one may not.
Now you know the nomenclature,
You can hunt without ill-nature.
So you search with greatest care,
Offering up a fervent prayer.
BUT, 0 HELL! You tear your hair!
YOU CANNOT FIND IT ANYWHERE!!!





IN THIS ISSUE

There is grandeur in this view of life, ...that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being evolved.

Charles Darwin, "On the Origin of Species", 1859

LONG ISLAND MYCOLOGICAL CLUB
11 RAMBLEWOOD RD.
RIDGE, NY 11961