SPORE PRINTS

BULLETIN OF THE PUGET SOUND MYCOLOGICAL SOCIETY
Number 440 March 2008

Goodbye, Ben

Ben Woo
1923–2008

Ben Woo, first PSMS annual exhibit, 1964

It is with profound sadness that we report the passing of PSMS founding father Ben Woo, who died Friday, February 8, of heart failure. He had been ailing since last November, when he suffered a heart attack and then a stroke while in France for a regional foray with the North American Mycological Association (NAMA).

Ben Woo with NAMA award for "Contributions to Amateur Mycology," 2002

A charter member, Ben—along with UW Professor of Botany Daniel E. Stuntz and Pacific Science Center Director Dixie Lee Ray—was instrumental in the founding of PSMS in 1964. Never one to rest on his laurels, he continued to play an active role in PSMS until his death. He was the first president of the Society, the first chair of the annual exhibit, and the first editor of the club's newsletter, originally called the *PSMS Bulletin*. An architect who formerly headed his own firm, he prepared the plans for laying out the annual exhibit as well as serving as chair of the exhibit signage committee. He hosted field trips, taught mushroom classes, and, along with Joy Spurr, conducted a workshop of close-up photography. In 1980 when PSMS hosted the annual meeting of NAMA for the first time, he co-chaired the event.

His mushroom proficiency was not limited to PSMS. He was an active member of the Pacific Northwest Key Council, where he served a term as president and wrote the key to the genus *Russula*. He was also active in NAMA and for many years served as the board representative for its northwest region. In 2002 he received the prestigious NAMA award for "Contributions to Amateur Mycology."

In addition to his mushroom expertise, Ben was equally respected and esteemed outside the mushroom community. Widely known for his involvement in Seattle's International District, he was a founder of the Kin On nursing home, a founder of the Chinese Community Service Organization, president of the Seattle chapter of the American Institute of Architects, and head of the Chinatown-International District Preservation and Development Authority. He worked with the Lighthouse for the Blind, AIDS Housing of Washington, the Seattle Human Rights Commission, and the Mount Baker Housing Association. He was an original member of the Washington State Commission on Asian American Affairs. When he retired in 1995, he was the director of the King County Department of Construction and Facilities Management.

His dry wit, his wisdom, his keen intelligence that cut to the heart of any problem, his gentle, soft-spoken nature—he will be sorely missed.

There were no services. His ashes will be spread over his favorite mushroom spot.

MUSHROOM POISONING SYNDROMES

North American Mycological Association
www.namyco.org/toxicology/poisoning.html

There are many different types of mycotoxins. It's not surprising then, that there are different degrees and types of mushroom poisoning. Since most mushroom species are rarely eaten, many toxins are poorly documented. NAMA maintains a case registry where you may report instances of mushroom poisoning.

The following list is not exhaustive. It is presented here for informational purposes, and should not be considered an aid to diagnosis. If you suspect that you have consumed a poisonous mushroom, contact a physician or your local poison control center.

Gastrointestinal Irritants

The most frequent form of mushroom poisoning is caused by a wide variety of gastrointestinal irritants. The symptoms usually appear within 20 minutes to 4 hours of ingesting the mushrooms, and include nausea, vomiting, cramps, and diarrhea, which normally pass after the irritant had been expelled. Severe cases may require hospitalization. Treatment is largely supportive—helping the patient's body to eliminate what it's not equipped to handle. Recovery is complete, though a bout with severe gastrointestinal distress may put one off ever eating mushrooms again!

Muscarine

Mushrooms: *Inocybe* species, *Clitocybe dealbata*, and several relatives, *Omphalatus* species, and certain red-pored *Boletus*.

The symptoms usually occur within 15–30 minutes of ingestion and are focused on the involuntary nervous system. They include excessive salivation, sweating, tears, lactation in pregnant women, severe vomiting, and diarrhea. These symptoms may be accompanied by visual disturbances, irregular pulse,

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CALENDAR

Mar. 7	PSMS Survivor's Banquet and Annual Meeting, 6:30 PM, South Seattle Community College
Mar. 14	Mushroom Maynia meeting, 6:30 PM, Patrice Benson's house
Mar. 17	Board Meeting, 7:30 PM, CUH
Mar. 18	*Spore Prints* deadline
Mar. 29	Field Trip, MacDonald Park, 9:30 AM
Apr. 6	Field Trip, Ostrom's Mushroom Farm
Apr. 8	Membership Meeting, 7:30 PM, CUH

BOARD NEWS

Dennis Oliver

Reflecting the quiescence of winter, the board agenda for February was light. Much of the meeting was taken up discussing and planning for the annual Survivor's Banquet. The menu has been decided, and the venue set. Be sure to get to get your RSVPs in as soon as possible to reserve your place at what will be a very memorable affair. The election ballots have been sent out, and what is a sure harbinger of spring, the annual *Verpa bohemica* field trip, has been set for the last Saturday in March. Can the morels be far behind?

MUSHROOM MISSIONARIES

On February 8th, Hildegard Hendrickson gave a talk on mushrooms to the 5th and 6th graders at Lynndale Grade School in Lynnwood, during their "Science Day."

ANNUAL MEMBERSHIP MEETING & SURVIVOR'S BANQUET

Friday, March 7, 2008, at 6:30 PM at the Brockey Conference Center, South Seattle Community College, 6000 16th Ave SW, Seattle 98106

Once again it is time for the annual Survivor's Banquet, where we gather and congratulate each other for making it through another mushrooming season. This year our banquet will be on Friday, March 7, at the Brockey Conference Center, South Seattle Community College, 6000 16th Ave SW, Seattle 98106 (see maps and directions at http://www.southseattle.edu/campus/map.htm). Please note that there will be *no* regular membership meeting on Tuesday, March 11, at the Center for Urban Horticulture.

PSMS member Chef Michael Blackwell will direct the kitchen and will create a multicourse feast followed by an elegant dessert, all inspired by our bounty of edible mushrooms. The doors will open at 6:30 PM with dinner served at 7:00 PM. Drinks are BYOB.

The program will include presentation of the "Golden Mushroom Award," which honors a fellow member's long-term service to the club, and we will do some business as well, convening the annual membership meeting to announce newly elected board members and club officers. This will also be your opportunity to dress up and wear your favorite mushroom apparel, hats, and accessories, or even your favorite mushroom hunting outfit—whatever you feel like wearing!

TEN COMMANDMENTS

R.V. Gessner

Fumgafama, So. Vancouver Is. Myco. Soc., October 2007

1. Never eat a mushroom unless it is positively identified as edible.
2. Eat only fresh mushrooms that are free from insect infestation.
3. Thoroughly cook all mushrooms unless they are specifically known to be edible raw. (SVIMS caution: ALWAYS cook all mushrooms.)
4. Eat mushrooms only in moderate quantities.
5. When trying a mushroom for the first time, eat only a small portion, and don't try any other kinds for 48 hours.
6. Don't pick mushrooms from contaminated habitats.
7. Never assume that a wild mushroom you find overseas is the same edible species you know from North America.
8. Be conservative about feeding wild mushrooms to children, the elderly and the infirm.
9. When trying a mushroom for the first time, save a few intact, uncooked specimens in the refrigerator for 48 hours.
10. Examine every specimen in every collection of mushrooms to avoid inadvertent mixing of different species.

SPRING FIELD TRIP

Our first field trip of the upcoming spring season will take place on Saturday, March 29. In keeping with tradition, it will be a half day jaunt to MacDonald Park on the Tolt River just outside of the town of Carnation. The park includes numerous cottonwood trees, which, if luck is with us, should yield an abundance of *Verpa bohemica,* the Early Morel. Oyster mushrooms are also sometimes around, so remember to look both low and high.

March 29 **MacDonald Park**
(~30 miles east of Seattle)

McDonald Park is located on State Highway 203 about ½ mile south of the town of Carnation, Washington. Enter the park on N.E. 40th Street and park in the day use area. We will meet at 9:30 AM at the main shelter located across the suspension bridge. Brian Luther and Hildegard Hendrickson will give brief introductions to mushroom hunting and describe what fungi we can expect to find and what environment they need. After the short lectures, Brian and Hildegard and other experienced members will lead groups to gather specimens. We will return to the shelter at approximately 11:30 AM, where all mushrooms found will be identified. We will eat the sack lunch we brought, go out collecting again, or go home.

Cottonwood tree

This is a learning field trip and will be held "rain or shine." Please read the "Field Trip Tips" article below, and by all means wear waterproof footwear and bring the recommended gear. Tony Tschanz will be the host.

Verpa bohemica

FIELD TRIP TIPS **Agnes Sieger**

For those who joined PSMS at the Annual Exhibit in October, I thought it might be nice to review some basic mushrooming tips regarding the upcoming spring field trips.

Apparel: The Pacific Northwest is wet. Wear warm clothing, preferably in layers, and waterproof shoes or boots and bring your rain gear. Pacific Northwest vegetation is usually thick, and the sky is frequently overcast. Bring a compass and whistle and a map of the area—and remember to use them.

Mushrooming Gear: You will need a wide-bottomed container for your mushrooms. This can be a basket or bucket. Do not use plastic sacks; they tend to condense moisture and turn mushrooms into mush. You will need a sturdy knife suitable for cutting and prying and perhaps a soft brush to clean up the edibles; some people even bring a small garden trowel for digging. To protect individual specimens for identification, take some wax paper sandwich bags or aluminum foil.

Collecting: If you know you have a good edible, cut off the stem cleanly and brush off as much soil and debris as possible. Store like species in a rigid container where they won't get crushed or pick up more dirt. Try to keep the mushrooms cool and dry, and process them as soon as possible. If you don't know what you have, the identifier will need to see the whole mushroom.

Field Trip Format: Most PSMS field trips are planned for Saturdays, since this is the most convenient time for many people. Almost all field trips have hosts, who set up by 9:00 AM on Saturday with hot coffee and snacks. The hosts greet and sign in members, relay general tips on what is up and where to find it, and introduce newcomers to more experienced members. They also have a map of the area. After signing in, field trip participants gather their gear and head for their favorite hunting grounds. In the afternoon, they come back to the campsite to identify their finds, compare notes, and prepare for the potluck.

Potluck: The potluck starts at 4:00 PM (sometimes later when the days are longer in the summer). You need to bring your own eating utensils and beverage and a dish to contribute to the table. This can be an appetizer, a salad, a main dish, or a dessert. The food is usually delicious, and the potluck is a great time to swap tales, collect recipes, and share mushroom information with friends old and new.

CALLING ALL PHOTOGRAPHY BUFFS **Milt Tam**

A photography interest group will be forming. The first orders of business will be to discuss development of a 2009 PSMS calendar to showcase a selection of the best mushroom photos taken by our members, and organizing a photo contest at this year's PSMS fall exhibit. We will schedule an organizational meeting soon, possibly just prior to our monthly membership meeting in April. If you can spare some time and are interested in participating, please leave your name with Milton Tam at miltontam@aol.com.

LIBRARY NOTICE **Kim Traverse**

Pick up a free issue of *Ambio*, published by the Royal Swedish Academy of Science with the feature article on "The Biological, Socioeconomic, and Managerial Aspects of Chanterelle Harvesting on the Olympic Peninsula" based on the chanterelle study that PSMS members helped conduct. We have lots copies and there is even a photo from one of the annual exhibits! Available at any meeting with the books on display.

WOOD CHIPS, FOOD SCRAPS, BACTERIA, AND FUNGI = HUMUS **Eric Gold**

Pamplin Media Group, Feb. 12, 2008

On a 66-acre lot in North Plains, Oregon, just off U.S. Highway 26, a few billion workers toil on a steaming pile of dirt. They don't mind the cramped and filthy conditions, though: They're bacteria.

Bacteria, fungi, and related microorganisms, that is. And the pile they're working on isn't really dirt, it's humus. At least, it will be when they're done with it. Then the humus will be bagged, ready to be spread on gardens, orchards, and vineyards across the state.

Not to be confused with the contents of your pita wrap, humus is a soil amendment that results when wood chips and other organic

cont. on page 4

Humus, *cont. from page 3*

waste are composted. Humus is stable, meaning that decomposition is complete. It's chock-full of critters that are beneficial to plant life. And, in this case, it's approved for use in organic agriculture by the Organic Materials Review Institute, a Eugene-based nonprofit.

The main work of creating the humus takes place in 10-by-200-foot green plastic Ag-Bags, which lie side by side, looking like giant caterpillars or, as Pacific Land Clearing manager Glenn Zimmerman puts it, sausages. The process of loading the Ag-Bags, Zimmerman says, is "kind of like a sausage machine, except the machine moves away and the sausage stays put."

Inside the bags is a mix of 30 or 40 parts carbon (wood chips) to one part nitrogen (fruits and vegetables). Nature's Needs buys the material from businesses, including AGG Enterprises, a waste hauler and distributor, and Organically Grown, a wholesale organic produce distributor, and from individuals.

The material is shredded and loaded into the bags, which have perforated hoses running through them, blowing air. If there isn't enough air, Zimmerman says, the nitrogen gets converted to smelly gases by bacteria that favor an airless environment.

As long as there is enough air and moisture, though, and the temperature is kept at least 131 degrees Fahrenheit to kill weed seeds and pathogens, the good bacteria and fungi grow like crazy. All that's needed to maintain the high temperature is the activity of the bacteria, which creates heat, and the plastic bag to keep it in.

After seven to 10 days in the bag, the humus is moved by front-end loader into a power screener, a kind of truck-size sieve. Pieces a half-inch in diameter or smaller are ready for shipment to area farmers, or in bags to retailers. The larger pieces are returned to inoculate the next row.

Cindy Salter, an agronomist who consults on the operation, says that there are hundreds of thousands of tiny species in healthy humus, and there can be billions of bacteria per gram of soil.

"Each type serves a different function in the soil environment," she says, adding that the microorganisms help buffer the soil against radical fluctuations in temperature and pH, which can be bad for plants.

The bacteria and fungi live in a kind of symbiotic relationship with plants, digesting sugars excreted by the roots and returning nitrogen and other minerals from the soil to the plants. "The organisms are essentially the stomach of the plant," she says, even though they are independent organisms and live outside the plant's body.

Salter says that using humus is more efficient than adding nitrogen in the form of fertilizers, since up to 70 percent of that can leach out into groundwater.

"Conventional agriculture is always taking, taking, taking" nutrients out of the soil, she says. "We haven't really been putting back in everything that we take out. Compost makes it a sustainable loop."

NAMA Poisoning Syndromes, *cont. from page 1*

decreased blood pressure, and difficulty breathing. Victims normally recover within 24 hours, but severe cases may result in death due to respiratory failure. Atropine is a specific antidote, but must be administered by a physician.

Isoxazole Derivatives (Muscimol, Ibotenic Acid, and Relatives)

Mushrooms: *Amanita muscaria*, *A. Pantherina*, *A. gemmata*, *A. cothurnata*, *A. frostiana*, *A. crenulata*, *A. strobiliformus*, *Tricholoma muscarium*.

There is a great deal of confusion concerning these toxins, and much misinformation about their treatment. Atropine is NOT indicated in cases of poisoning by ibotenic acid or muscimol but is frequently cited as a treatment for *A. muscaria* poisonings in the medical literature, where the toxin is erroneously listed as muscarine! Atropine's effects are close to those of ibotenic acid, and may even exacerbate the symptoms.

Symptoms appear within 30 minutes to 2 hours after ingestion, and last for several hours. Nausea and vomiting are quite common, but the principal effects are on the central nervous system: confusion, visual distortion, a feeling of greater strength, delusions, and convulsions. Drowsiness is a common symptom, and many who ingest these mushrooms fall asleep and cannot be roused. This facet of the syndrome can be particularly frightening for the attending physician, as most cases involve patients who arrive in this apparently comatose state. The resulting panicked reaction, and overtreatment, generally produces no benefit to the patient.

Treatment is largely supportive—reassuring the patient that the effects are only temporary. Recovery is normally spontaneous. To reiterate: Muscarine plays no documented clinical role in poisonings by or *A. patherina*. Atropine is not indicated.

Amanitin (Amatoxins)

Mushrooms: *Amanita phallodies, A. ocreata, A. verna, A. bisporigera, Conocybe filaris, Galerina autumnalis, G. marginata, G. venenata, Lepiotia castanea, L. helveola, L. josserandii*, and close relatives.

Extremely Serious. The fatality rate for Amanitin poisoning is about 50%. It is doubly dangerous because the symptoms are delayed for 6 to 24 hours after ingestion, by which time the toxins have been completely absorbed by the body.

Amanitins are a group of complex cyclic polypeptides which damage tissues by inhibiting RNA synthesis within each individual cell. Onset of symptoms manifests itself in four stages:

The first stage is a latency period of 6 to 24 hours after ingestion, in which the toxins are actively destroying the victim's kidneys and liver, but the victim experiences no discomfort.

The second stage is a period of about 24 hours characterized by violent vomiting, bloody diarrhea, and severe abdominal cramps.

The third stage is a period of 24 hours during which the victim appears to recover (if hospitalized, the patient is sometimes released!).

The fourth stage is a relapse, during which kidney and liver failure often occurs, leading to death. There may be more than one relapse.

If you have any reason to suspect that someone has ingested an amanitin-containing mushroom, **Don't wait for symptoms to appear!** There is no antidote for amanitin poisoning, and the best hope is to rush the person to the hospital where the toxins can be removed before being fully absorbed into the body. Treatment is largely supportive and symptomatic. Penicillin, kutkin, and silibinin/silymarin show promise as treatments, along with oral activated charcoal and electrolytes.

Gyromitrin

Mushrooms: Several *Gyromitra* spp., also many related Ascomycetes, such as some species of *Helvella*, *Verpa*, and *Cudonia*.

Gyromitrin's product of hydrolisis is monomethylhydrazine (MMH), a colorless, volatile, highly toxic, carcinogenic compound first discovered and used for its hypergolic properties in combination with nitrogen tetroxide. MMH is used by NASA as rocket fuel, which should give some idea of what is meant by "volatile."

"Volatile" also means that gyromitrin has a low boiling point, and thus mushrooms containing it can have a puzzling non-effect on some, whereas others are severely poisoned. The dividing line between a "safe" and "lethal" dose is very slim.

Symptoms appear within 2 to 24 hours and include headaches, abdominal distress, severe diarrhea, and vomiting. In severe cases, liver, kidney, and red blood cell damage may occur, possibly resulting in death. Treatment is largely supportive, and a physician should be consulted.

Gyromitrin is also a known carcinogen, so consuming a less-than-toxic dose may also cause trouble down the line.

Orellanine

Mushrooms: *Cortinarius orellanus*, *C. orellanoides*, *C. speciosissimus*, *C. rainerensis*, *C. splendens*, *C. atrovirens*, *C. venenosus*, *C. gentilis*, and many other *Cortinarius* spp.

Extremely Serious. Onset of symptoms from orelanine poisoning can be greatly delayed (as much as three weeks), the toxin isn't well understood, and specific treatments are not available.

Symptoms occur within 36 hours to 3 weeks of ingestion (average is about 8 days) and include nausea, vomiting, lethargy, anorexia, frequent urination, burning thirst, headache, sensations of coldness and shivering (fever is generally absent), evidence of progressive kidney failure.

Beyond the standard management of kidney failure, there is little but supportive treatment of use in cases of orellanine poisoning. Patients with severe but not irreversible damage may begin to recover kidney function between two and four weeks after the onset of symptoms.

Psilocybin, Psilocin, and other Indole Derivatives

Mushrooms: *Psilocybe cyanescens*, *P. stuntzii*, *P. cubensis*, *P. semilanceata*, *Panaeolous cyanescens*.

These indoles are well known as hallucinogens, and these mushrooms have played important roles in religion and medicine in some parts of the world, notably in South America. Their properties were "rediscovered" by mycologists in Oaxaca in the 1930s, and studied by mycoethnographers Gordon and Valentina Wasson in the 1950s; their chemistry was documented by Albert Hoffmann.

Both psilocybin and psilocin—a dephosphorylated version which is some ten times as potent—are found naturally in mushrooms, though their ecological purpose is unknown. In the human body, they affect the serotonergic systems in the brain, and show some cross-tolerance with substances such as LSD.

Onset of symptoms usually occurs within an hour of ingestion, and effects typically last up to four to six hours. Effects are primarily psychological and perceptual, including heightened color perception, emotional effects such as religious ecstasy or anxiety, and sometimes hallucinations or delusions. As with any other psychologically active substance, mindset and situation can greatly influence psilocybin's subjective effects. Care should be taken not to frighten or upset a person under its influence, and if a victim does become anxious, to reassure them that the effects are temporary. Little research has been done on antitoxins, but tryptophan may have a mitigating effect.

Nausea and vomiting are sometimes associated, but generally occur earlier than the psychological effects, and may be associated with other toxins present in some psilocybin-bearing species rather than with the indoles themselves. A very few severe reactions, including fevers and deaths, have been reported in contexts of psilocybin poisoning of small children; "grazing" accidents by toddlers should be treated in a hospital.

Perhaps the greatest danger posed by psilocybin as a mycotoxin is that the mycologically ignorant may, in hunting for "magic mushrooms," find themselves consuming something different and far more dangerous. *Galerina autumnalis* and other amanitoxin-bearing "little brown mushrooms" may be mistaken for hallucinogenic species, and there has even been a report of children inhaling the spores of *Lycoperdon* puffballs in the hopes of "getting high," only to wreak havoc on their lungs.

Miscellaneous and Unknown Toxins

Amanita smithiana

Amanita smithiana has caused numerous poisonings in the Pacific Northwest, where it is possibly being mistaken for the popular Matsutake, or "Pine Mushroom," *Tricholoma magnavelare*, to which it bears a superficial resemblance. Many physicians have been quick to attribute these poisonings to orellanine, and indeed there are some obvious similarities in the symptoms. However, onset of symptoms is more rapid in cases of *A .smithiana* poisoning (between 4 and 11 hours, compared to orellanine with a 36 hour to 3 week onset period). *A. smithiana* causes both renal and hepatic failure.

Paxillus involutus

Although rarely reported in North America, poisonings by *Paxillus involutus* do occur, and the mushroom is common enough to warrant inclusion here. It is the third most common cause of gastrointestinal symptoms in Eastern Europe, where is has a long and unfortunate culinary history. However, the main toxic component in *P. involutus* causes acute immune-mediated hemolytic anemia.

Hemolytic anemia occurs mainly in individuals who have eaten *P.involutus* for many years without ill effect. Because the syndrome is related to repeat, long-term exposure to the toxin, poisonings may likely go unrecognized, with the more likely diagnosis being idiopathic immune hemolytic anemia.

It is perhaps warranted to suggest that in cases of idiopathic anemia, especially in patients of Eastern European extraction, that the question of *P.involutus* consumption be raised.

ONE-OF-A-KIND EGG — Josephine Huang

The Straits Times, Singapore, January 14, 2008
via http://health.asiaone.com

Many people try to limit or even avoid eggs in their diet because of the high cholesterol concentrated in the yolk. But eggs aren't about to go out of style yet, as researchers suggest that eating them increases both "good " and "bad" cholesterol.

And then there are egg producers like Chew's Agriculture, right here in Singapore, that work to make the goodness of eggs even better. Chew's Agriculture, in collaboration with AP Nutripharm, has come up with what it says is a world first—the *Cordyceps* egg.

Cordyceps sinensis belongs to a family of parasitic fungi that attack a species of caterpillar in winter. When the caterpillar is hibernating, this fungus slowly eats away at it and, by the end of winter, the process is complete, and the caterpillar now looks like a plant. A literal translation of the Chinese term for *Cordyceps* is "winter worm, summer plant."

The Chinese discovered the health benefits of *Cordyceps sinensis* centuries ago when they noticed that sheep which grazed on it were stronger and healthier. Traditional herbalists then began using the fungus for curing several diseases.

Although wild *Cordyceps* are said to be the most powerful, they are quite expensive and difficult to buy in many parts of the world. Therefore, the cultivated forms of the fungus are the most popular and widely spread.

Cultivated *Cordyceps*, produced here in Singapore by AP Nutripharm, are what is used in the feed for the chickens that lay *Cordyceps* eggs.

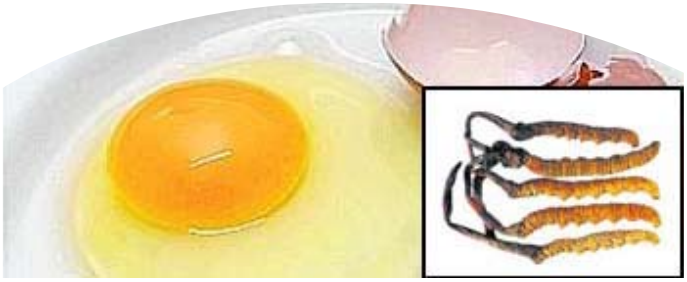
The idea came about when both companies were seeking an alternative to antibiotics in animal feeds.

"There have been concerns all over the world about the use of antibiotics to reduce disease and boost growth in livestock," said Dr. Mark Xu, managing director and chief executive officer of AP Nutripharm.

"Antibiotic resistance by microorganisms that cause disease in humans and animals has risen sharply and there's evidence that this resistance is promoted by the antibiotics given to animals."

The chickens were actually fed with Nu-V *Cordyceps sinensis* mycelium, to boost their weight. And though there was considerable weight gain in the chickens, the amount of fungus needed for this was far too expensive. But the experiment showed that cordycepin (an active *Cordyceps* compound) did find its way into the eggs, said Dr Xu.

After several experiments with various amounts of *Cordyceps* in the feed, the lab came up with the minimum that, though it wouldn't result in much larger chickens, would allow them to lay eggs containing cordycepin.



Cordyceps egg (left) and Cordyceps sinensis *fungi (insert).*

"Cordycepin has proven to contain anticancer and disease-resistant properties," said Dr Xu. "As for the *Cordyceps* eggs, they have only been launched last month. So their benefits are yet to be appreciated.

"However, this is not a drug. It is a food and we are not out to prove that it has curative powers.

"Apart from the cordycepin nutrients, the eggs are 30% lower than ordinary eggs in cholesterol and have a dramatically improved texture with a smooth, 'bouncier' white and sweeter yolk."

That might explain why they are pricier. Chew's Cordyceps Eggs, available at Shop n Save, Prime, Cold Storage, NTUC Fairprice and some organic shops, retail at $3.95 for a pack of six. That's about twice the price you would usually pay for 10 eggs.

PRESIDENT'S MESSAGE — Patrice Benson

Our first president and a founding member of PSMS, Benjamin Woo, passed away February 8, 2008, after suffering a stroke while on a mushroom trip in France in November. Ben was beloved by all and will be remembered fondly by the many people whose lives that he has touched. He gave generously of his time, expertise, and resources. Please join me in expressing your sympathy and remembrances to his wife, Ruth, and all of the other members of his family. There will be an memorial article about Ben forthcoming in the next *Spore Prints*, and a short article in this issue.

We are coming up on the Survivor's Banquet, which will be held March 7, 2008, at 6:30 PM at South Seattle Community College. We will be honoring this year's recipient of the Golden Mushroom Award.

Spring is coming and with it the return of the mushrooms. Our first field trip will be March 29th at MacDonald Park in Carnation. Hildegard Hendrickson and Brian Luther will be leading the hunt and be giving excellent instructions for the beginner mushroom hunters. New members should not miss this!

The field trip to Ostrom's Mushroom Farm has been filled, but there is a possibility of a second tour being added on the same day. Keep your fingers crossed and check with Milton Tam (miltontam@aol.com) if you are not on the Yahoo list. If you would like to join the Yahoo mushroom list, please see the directions in the roster on page 40 or in a past issue of the *Spore Prints*.

Mushroom Maynia will need many PSMS volunteers to be available on the day of our first Maynia. Please e-mail Patrice at patrice.benson@comcast.net to donate a few hours on May 4th at the Burke Museum. Parking is free on Sundays! The hours will be from 10 AM–4 PM, so come and spend a few hours or the whole day!

Dr. Nancy Smith Weber will be our speaker on April 8, 2008. Dr Weber is an internationally recognized expert on morels and is the daughter of Dr. Alexander Smith, father of North American Mycology.

Be ready for the spring mushroom ID classes (see details on pages 7 and 8 of this issue).

See you all at the banquet. Don't forget that there will be no membership meeting on the second Tuesday in March. The annual meeting and Survivor's Banquet on March 7th takes the place of our regular meeting.

DETERMINING ODOR AND TASTE

Michael Kuo

MushRumors, Oregon Myco. Soc., May/June 2007

The odor and taste of a mushroom can be important in the identification process. I'm aware that you probably don't need me to tell you how to use your sniffer and your taste buds—but there are a few things you may want to keep in mind when it comes to smelling and tasting mushrooms.

Odors

I take a piece of the mushroom (or a whole cap, in the case of small mushrooms) and crush it between my finger and thumb before trying to assess an odor. Usually the cap is the best part of the mushroom to test, but occasionally you will discover that some other part of the mushroom should be tested (for example, the stem bases in *Agaricus*).

Whenever I ask my wonderful wife Kate to smell a mushroom, her verdict is: "Smells like a mushroom." Some people cannot detect certain odors; I can't smell the "phenolic" odor in *Agaricus* species, but I can sniff out "farinaceous" from yards away. Experience will tell you which odors you are best at detecting.

"Not distinctive" is probably the most common mushroom odor, but distinctive smells include:

● *Farinaceous or mealy*. Often compared to the odor of cucumbers, watermelon rind, or an old grain mill. Common in many mushrooms, including *Polyporus squamosus*, *Agrocybe praecox*, *Mycena galericulata*, *Tricholoma sejunctum*, *Clitopilus prunulus*, and *Entoloma abortivum*. Some mycologists (e.g., Smith and Moser), armed with better sniffers than mine, subdivide "farinaceous" into three odor groups: strictly farinaceous, cucumber/farinaceous, and rancid-oily-fishy/farinaceous. Believe it or not, the cucumber/farinaceous sub-odor has been upheld by chemical research as a valid distinction, and the chemical trans-2-Nonenal has been identified as being responsible for it.

● *Foetid-Russula odor*. Often compared to benzaldehyde (whatever that is); to me it smells like maraschino cherries that have gone slightly bad.

● *Fishy or shrimplike*. Examples include *Lactarius volemus* and *Russula xerampelina*.

● *Spermatic*. Primarily in species of *Inocybe*. (More on this at "Hey, That Mushroom Smells Like..." http://www. mushroomexpert.com/inocybe_rimosa.html#odor)

● *Like anise* (the flavoring in ouzo or black licorice). Examples include species of *Clitocybe* and *Agaricus*.

● *Like green corn*. Examples include species of *Inocybe* and an odd species of *Porpoloma* I have not yet identified.

● *Like bleach*. Primarily in species of *Mycena*.

● *Like swamp gas or coal tar*. Primarily in species of *Tricholoma*.

● *Like apricots*. Primarily in species of *Cantharellus*.

● *Like almonds*. Primarily in species of *Agaricus*.

● *Like garlic*. Primarily in species of *Marasmius*.

● *Phenolic*. I wish I could help you with a comparison, but I don't sense this odor well. When others say a mushroom smells phenolic, I smell nothing or, in some instances, an almond odor that has been pushed to the extreme. Primarily in species of *Agaricus*.

● *Foul*. Any mushroom can smell foul after it has begun to decay, but some have a strongly unpleasant odor anyway. Examples include Stinkhorns and *Lepiota cristata*.

Taste

Since there are some deadly poisonous mushrooms out there, you should be careful when it comes to tasting mushrooms!

One swallowed bite of *Amanita bisporigera* or *Galerina marginata* could contain enough poison to kill you. To be honest, it is doubtful that swallowing your spit after you have tasted and spit out a piece of deadly mushroom is likely to cause you any harm (sorry to be graphic, but I want to be as clear as possible). Still, it is better to be conservative in matters like this; please study and follow the guidelines below, and bear in mind that taste is only one of many features that can help you identify a mushroom.

● Study the Amanitas, especially the deadly ones. Memorize their details—from button stage to maturity—and never taste any mushroom that could remotely be similar.

● Do not taste any mushroom unless you are reasonably sure you have approximated its identity and that it belongs to a genus that holds no species known to be deadly poisonous. For example, you know you are holding a bolete, and you wonder whether it might be a *Tylopilus*, a reasonable scenario. But never pull one of these: "What's this? I have no idea. I think I'll taste it."

● If your mushroom has a mealy or bleachlike odor, do not waste your time (or your taste buds) testing its taste. It will undoubtedly taste more or less like it smells—and assessing the odor is already enough for identification purposes.

● To determine taste, tear off a very small piece of the mushroom's cap (including flesh as well as gills or pores). Put it on the tip of your tongue, and hold it in your mouth for a few seconds (perhaps a little longer in the case of *Lactarius* mushrooms, since some of their tastes develop slowly). DO NOT SWALLOW, and try not to trip over anything. Spit the mushroom out, and rinse your mouth out thoroughly with water, being careful not to swallow.

● If you have tasted *Lactarius piperatus*, *Tylopilus felleus*, or another excruciatingly acrid or bitter mushroom, be prepared to regret the experience. Do not kiss anyone for several hours afterwards!

Kuo, M. (2006, November). "Determining odor and taste," retrieved from the MushroomExpert.Com website: http://www.mushroomexpert.com/odortaste.html

BEGINNING MUSHROOM ID WORKSHOP

Colin Meyer

What:	PSMS Beginning Mushroom ID Course
Where:	Center For Urban Horticulture, Douglass Classroom
When:	Thursday Evenings, 7:00 PM – 9:00 PM, 3/20–4/10 (first session), 4/17–5/8 (second session)
Cost:	$35, cash or check payable to PSMS (bring on first day of class)
Book:	*Mushrooms Demystified*, by David Arora
Bring:	Fresh mushroom specimens
Contact:	education@psms.org for questions or to register

cont. on page 8

ID Classes, *cont. from page 7*

PSMS will offer a beginning mushroom identification class this spring on four consecutive Thursdays, beginning on March 20. Classes will be held at the Center for Urban Horticulture, in the Douglass classroom, from 7:00 PM to 9:00 PM.

The sessions will be (subject to possible rearranging) as follows:

Mar 20 - "Introduction to Mushroom ID," Mar. 27 - "Identifying Mushrooms with Dichotomous Keys" Apr. 3 - "Cooking and Collecting," Apr. 10 - "Mushroom Toxins."

The recommended text is *Mushrooms Demystified* by David Arora. There are several copies available for classroom use from the PSMS library, and the book will be available for sale on the first day of class.

Class cost is $35 for four sessions. For questions, or to register, please send e-mail to education@psms.org with your name(s). If you don't have access to e-mail, you may call (206) 354–7789, but e-mail is preferred.

Registration is available for PSMS members only; if your membership is not current, please print off the membership form from the PSMS website (http://psms.org) and send it in. Please confirm your registration before coming to class, as classes often fill up.

Please bring specimens of fresh mushrooms to class. Collect the whole fungus, including any root or cup at the base of the stalk. Specimens are best preserved by wrapping in foil or wax paper and putting them in the fridge, where they will last from several days up to a week, depending on the species. You should make a spore print, if you know how. (If you don't, that's OK. We will learn how on the first day of class.) It is also useful to take a few notes about where the mushroom was collected, and from what sort of habitat (whether on wood or ground, what type of wood, and what type of trees it grows under).

FRESH MUSHROOM SOUP

Michael Blackwell

A perennial favorite at The Grape Restaurant in Dallas, Texas, where I was chef for 10 years. This soup was featured on a PBS program called "Quest for the Best." Even people who say they don't eat mushrooms like this soup and ask for more.

6 Tbsp	Butter
1 each	Medium onion, finely chopped
1 pound	Fresh mushrooms, white or brown button
1 to 3 oz.	Dried porcini or other *Boletus* species
½ to 1 cup	Hot water, for rehydrating
¼ cup	Flour
4 cups	Beef bouillon, beef stock, or strong vegetable stock
¼ tsp	White pepper
1/8 tsp	Nutmeg
1½ cups	Heavy cream

Melt butter in a large saucepan. Add onion and stir over moderate heat until onion is browning and caramelized.

Add mushrooms and cook another 5 minutes, stirring occasionally. (While mushrooms are sautéing soak dried mushrooms in hot water.)

Blend in flour until mushroom/onion mixture is well coated. Add the stock slowly, stirring continually. After soaking dried mushrooms, finely chop and add along with soaking water when adding stock.

Bring mixture to a boil. Reduce heat, and simmer 5 minutes. Add white pepper and nutmeg. Remove from heat and stir in cream. Serves 4 to 6.

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