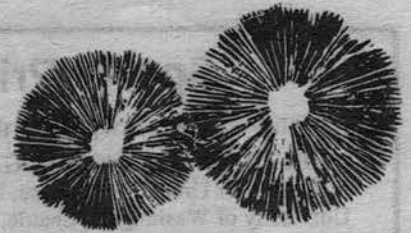


SPORE PRINTS

BULLETIN OF THE PUGET SOUND MYCOLOGICAL SOCIETY

Number 248

January 1989



HOUSE FUNGI

Dr. Richard Summerbell

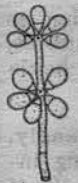
The *Mycelium*, Newsletter of the Toronto Myco. Soc.

Not many of us have bats in our belfries, but most of us have fungi in our pantries, not to mention other parts of the house.

My own investigations of household fungi actually took place in a hospital, which is sort of like a large, clean house with many guests. Here "opportunistic" molds like *Aspergillus fumigatus* take on a special importance, since some of the guests are in sufficiently poor health to be made ill by otherwise innocuous organisms.



The plant soils I looked at were a steady 19°C (66°F) no matter what the season. Some of them contained fairly large numbers of opportunistic mold spores. The actual number of molds varied wildly from plant to plant, even when the plants were the same species maintained under the same conditions.



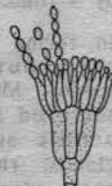
In general, each individual potted plant was a mycological island, with its own unique populations. These populations included not only opportunistic fungi but also nematode-trapping fungi, which capture microscopic eelworms in constricting loops, fungi like *Metarrhizium anisopliae*, which specializes in killing insects, and an enormous number of species probably most accustomed to breaking down cellulose and other components of cast-off roots and root bark.



When I compared the fungi in the hospital air with those growing in the plant soils, I found a complete contrast. Evidently, airborne species cannot compete with the indigenous molds. Airborne fungi for the most part belonged to two groups, which I'll call outdoor fungi and breadcrumb fungi.

The outdoor fungi consisted of a lot of species associated with grasses, grassland soils, and trees. Their numbers peaked during the summer. The breadcrumb fungi were mostly those species we all vaguely recognize on superannuated bread. They grew well in all seasons and were especially prevalent in carpeted lounges and offices.

Perhaps the most common of these thoroughly domestic fungi was *Penicillium chrysogenum*, a fungus famous not only for turning a great deal of bread (and rice, beans, and old coffee) blue but also for producing the antibiotic penicillin.



My conclusion was that as much as I love house plants I would not present one to a person who had a damaged immune system. They are one of the more potent sources of opportunistic fungi in the house — nowhere near as obnoxious as a moldy heating duct in an office building but still not to be trusted.

UPDATE FROM CHONGQING

Gary Smith

From my family I have no news about mushrooms. How was the season? What was the Exhibit like this year? There is little news here to connect me with Seattle. I do get the Voice of America, so I am apprised of the political situation and all the other bad news.

Mushrooms here are great. Most, I have had in the U.S. *Pleurotus ostreatus* and the common store mushroom are the most plentiful and cheapest. I have used the sweet white fungus often used in Chinese fruit soups to make my own variation. It is rather expensive even here. There is a black, flat, gill-less mushroom that is used dried in many soups and other liquid preparations. It is inexpensive, and I also buy it for my own use. (I have no reference books here so my ignorance will show through. Weight restrictions kept back many wished for items.)

Fruit here is truly wonderful. Pears, bananas, and oranges are my favorites. I have never had such varieties of bananas. Some are sweeter than sugar.

In the last two weeks, I finally met two members of the Biology Department. They have promised to show me about mushrooms here. Last Friday afternoon, Li Long, a shy but persistent member of the microbiology staff, took me to a *P. ostreatus* cultivation place. It is an old shed made of brick, with a tile roof. It is good shade and well ventilated. They use cottonseed meal as media. It is sterilized, and the inoculant is in bottles. They use plastic sacks and lay them like loaves of bread on racks after immersion. They get beautiful fruitings but would get more if the sacks were hung on end as the ones I see in Seattle. Everything here is sold by the kilogram or the half kilogram. Food, oils, detergent, anything, even for volume, is weighed. It is a good method.

Dai Chang Xiu, an older friend of the young lady who teaches evolution, lives above me. He cultivates mushrooms in his apartment, but I have not seen that. He has promised to teach me about it. They will also take me on an outing. They say it is far away. In a city this size, that is most likely. When I went to Dazu, it took 3 hours to get out of the city. Mostly that is due to poor roads and great congestion.

The food here is, as reported, hotly spiced. That has only been a problem for me once. This last Saturday I was taken to a banquet with "hot pot." It was great food. In the center of the table, a divided wok was boiled over a kerosene hot plate. The highly spiced liquid in it was watered occasionally. All about the table were many sliced items: cabbage, mushrooms (three varieties), fresh green beans, sea cucumber, chicken breast, stomach lining of the cow, duck intestine, pac-choi, bean sprouts (a tough variety), the brains of small animals (cat, dog or rabbit sized), congealed blood, eel fish, 0.5 cm slices of another, unknown fish, and probably some I have forgotten. There was also a clear bean curd. There was

cont. on p. 4

Spore Prints

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Calendar

- Jan. 10 New member orientation, 7:00-7:30 p.m., CUH
Membership meeting, 7:30 p.m., CUH
- Jan. 16 PSMS Board, 7:00 p.m., CUH
- Jan. 27 *Spore Prints* deadline
- Feb. 6 *Spore Prints* mailing, 10:00 a.m., CUH

LOST AND FOUND

Lost: Rectangular tray at the Christmas meeting. Betty Okura's name is on the bottom. If found, call 722-9011.

Found: Kitchen utensils, etc., at past few mushroom shows. January 10 is your last chance to recover that favorite serving spoon or kitchen towel. Anything left over after the meeting will be donated to a charity of my choice.

--Lori Knox

WANTED

Ride to Meetings: Ralph Rose, 12215 Dayton Ave. N., has had an accident and is no longer able to drive. If you would be able to take him to meetings, please call 361-0657. Let the phone ring 12 or 14 times; it's hard to get around in a walker.

Raffle Items: The raffle at the Christmas meeting was such a success, we're going to do it again. If you have any items you can donate, please call Pacita Roberts (362-2713) or Patrice Benson (722-0691).

Mushroom Recipes: The library is starting a file of wild mushroom recipes. Please send or bring your favorites (on a 4 x 6 index card, if possible). Include your name and alternate species that can be used. (Library hours are Thursdays, 12:00-3:00 p.m.)

Membership Meeting

Tuesday, January 10, at 7:30 p.m. in the Center for Urban Horticulture, 3501 N.E. 41st Street, Seattle.

Dr. Denis Benjamin will talk on "Mushroom Toxins -- Some Facts and Fictions." Included will be some non-technical history of the different treatments for *Amanita* poisonings and stories of why mistakes are made and people get poisoned. Dr. Benjamin is Director of Clinical Laboratories at Childrens' Hospital and Medical Center and is a member of the Department of Pathology and Laboratory Medicine at the University of Washington. Come join us for what promises to be a fascinating evening.

TOADS AND TOADSTOOLS

The Mycologist

The Mycological Society of Toronto
(adapted from an article in *New Scientist*)

The term "toad stool" was first used by Bartholomeus Anglicus, an English physician, in 1398 to describe any wild inedible mushroom. Similar names were used throughout Europe. In France inedible mushrooms were called "pain de crapaud" (toad's bread), in the Ukraine they were "zhabjachi hryb" (toadlike mushrooms), in Denmark and Norway "peddehatt" (toad's hat), and in Welsh "bwyd y llyffant" (toad's bread). The Dutch refer to all mushrooms as "paddestoel" (toadstools).

What connection do mushrooms have with toads, that so many mushrooms are named after them? For centuries, both have been associated with poisoning, folk healing, hallucinations, and witchcraft and religion.

Some mushrooms are not only poisonous, but deadly. Prominent people succumbing to mushroom poisoning include Buddha, Pope Clement VII, King Charles VI of France, Czar Alexis of Russia, and the Roman Emperor Caesar Claudius.

The toad most common in Europe is *Bufo bufo bufo* of the family Bufonidae. Members of this family have paratoid glands behind the ear drums and glands on the skin which produce venom when the toad is threatened. The venom causes would be predators to end up with sore eyes and a swollen mouth. As far back as 140 A.D. Roman wives sometimes disposed of troublesome husbands by giving them poisons containing toads' lungs. In Scotland in 1591 a witch admitted to trying to poison James VI with toad venom. The poisonous venom of toads was often exaggerated. In his *Decameron*, written in 1350, Boccaccio tells of two lovers who dropped dead, covered with purple blotches after eating sage that had been breathed on by a toad.

In terms of folk remedies, mushrooms played a small part, but all sorts of cures were attributed to toads. Many were unfounded, and often the poor toads suffered in vain. In the 17th century, for example, people suffering from tuberculosis of the lymph glands, rheumatism, plague, tumors, swellings, warts, etc., often hung a live toad in a bag around their necks until the animal died, taking the disease with it.

Some some of the remedies, however, were justified. Toad venom contains three main compon-



ents: biogenic amines, bufogenines, and bufotoxins. The bufogenines and bufotoxins strengthen the contractions of the heart muscles. In China 3000 years ago, toad's venom was used for heart ailments. In the 17th century, European physicians used toad venom as a heart drug until cheaper digitalis became available. The components also tend to have anaesthetic properties far stronger than cocaine. In an annual procession, the Yorubas of Nigeria whip themselves but show no signs of pain. They gain their anaesthesia by rubbing their skin with toad venom. Yoruba travellers and Somali porters rub a live toad on their foreheads to relieve heat and fatigue during long journeys. In China toad venom was applied externally to relieve swelling, sinusitis, and toothaches and internally to relieve colds and dropsy.



It is as hallucinogens that mushrooms and toads are most strongly linked. This quality was used sometimes for recreation, but more often in sorcery and witchcraft. Several mushrooms were often used. One was *Gymnopilus junonius*. A 4th century BC Greek writer claimed it induced clairvoyance. It might also be the laughing mushroom of Japanese folklore. *Panaeolus papilionaceus* and, more recently, *Psilocybe semilanceata* were used by witches and by others for recreation. Other fungi linked to witches were named witches butter, elfin saddles, fairies' caps, and devil's fingers. The most common mushroom used for hallucination was the fly agaric, *Amanita muscaria*. It is said the Vikings used it to work themselves into a frenzy before setting off to battle. In Japan, Britain, and Germany, it is linked to gnomes.

On the religious side, the fly agaric was used by the shaman to take him to the land of spirits. In Siberia, legend has it that the shaman had such extraordinary powers that the creator sent fire to burn him. Out of the flame came a toad which sent spirits to the people. The spirits taught the people how to communicate with them using the fly agaric.

The active ingredient of *Panaeolus* is psilocin, which is chemically similar to the indolalkylamines of toad secretions. In 1920 an Austrian pharmacologist crystallized bufotenine from toads venom and tested it on dogs and monkeys. The dogs howled for 2 hours, and the monkeys became indifferent to stimuli. In 1950 it was tested on volunteers from Ohio State Penitentiary. They turned a shade of aubergine and experienced hallucinations similar to LSD or psilocin.

Toads were often used to make potions, frequently ending up in a cauldron boiled alive. The Maya added toads to their ritual fermented drink to give it special potency. The shaman of Guyana rubbed toads over patients' bodies and even into cuts to cure them. The Lithuanians viewed toads as good omens and helpful spirits. Their dead were often buried under grave markers shaped like the hind legs of a toad.

Over the years the toad's image has improved, and it is no longer associated with poison, evil, or superstition. Still when the terms toad and toadstool are used, they conjure up visions of mystery and fear in the past.

Mail Call: Thanks to Mae Green, Bob Hamilton, Marian Harris, and Bob Judd for helping with the last mailing. Our next mailing is 10:00 a.m., Feb. 6, 1989, at CUH. Come along and catch up on the latest news.

Welcome to the following new members:

- Andrew Aldaraca, 6224 25th Ave. N.E., Seattle, WA 98115 525-9441
 David H. Breuninger, 8871 42nd Ave. S.W., Seattle, WA 98136 932-5212
 Charles and Tomoko Burkhalter, 17138 N.E. 140th Court, Redmond, WA 98052 881-7091
 Merle Burns and Sandra Keyashian, 3404 N.E. 6th St., Renton, WA 98056 271-2927
 Marilyn M. Droege, 1911 N. 49th St., Seattle, WA 98103 634-0394
 Sharon Dykstra, 10415 N.E. Brackenwood Lane, Bainbridge Is., WA 98110 842-5113
 David Eisenman, 4525 5th Ave. N.E., Seattle, WA 98105 547-7198
 Patricia (Tricia) Hering, 6521 44th Ave. N.E., Seattle, WA 98115 524-0230
 Karl Holmer, 14302 S.E. 162nd Place, Renton, WA 98058 255-2570
 Dan and Heather Howard, 11262 Roseberg Ave. S., Seattle, WA 98168 244-9595
 Kumiko and Harvey Hunsaker, 9219 169th Place N.E., Redmond, WA 98052 885-5173
 James Jacobson and Deborah Walther, 12341 14th Ave. N.E., Seattle, WA 98125 367-2535
 Larry Knudson, P.O. Box 693, Duvall, WA 98019 788-4695
 Christine Kondo, 4109 46th S.W., Seattle, WA 98116 937-3420
 Lois Lowery, 12343 Hiram Place N.E., Seattle, WA 98125 365-0709
 Robin Luke and Ken Gossage, 15217 N.E. 15th, #3504, Bellevue, WA 98007 643-0801
 Ann Maltzoff, 4501 Stanford Ave. N.E., Seattle, WA 98105 525-3577
 Gregg Miller, 24972 S.E. 30th St., Issaquah, WA 98027 391-1853
 George and Lila Milosevich, 18100 107th Place S.E., #1, Renton, WA 98055 235-8324
 Elliot V. Mock, 601 Belmont Ave. E., Seattle, WA 98102 322-9108
 Dee O'Donnell, 10212 N.E. 68th, #B204, Kirkland, WA 98033 827-6640
 Brad Pinkerton, 3845 24th Ave. W., Seattle, WA 98199 283-0963
 Susan Reit, 5816 17th Ave. N.W. #3, Seattle, WA 98107 783-5953
 Randy Richardson, 2344 30th Ave. So., Seattle, WA 98103 722-2210
 Margo Shimasaki, 2724 N.E. 45th St., #174, Seattle, WA 98105 522-1019
 Jon & Suzanne Stables, 8230 S.E. 59th St., Mercer Is., WA 98040 525-5366
 Miriam Tungate, 4207 S. Willow, Seattle, WA 98118 722-7911
 Fred Tuttle, 17201 15th N.W., Seattle, WA 98115 542-1221

and last but not least

Samuel Eugene Post, 9 lb 11 oz, born November 22 to Ron Post and Jodi Perlmutter. Congratulations, Ron and Jodi!

Chongqing, cont. from p. 1

a small bowl in front of each of us with an unknown sauce into which we broke a fresh egg to stir with our chop sticks. I think it was to cut the spice. It had little taste. But the food and comradery as items or whole plates of them were added and sampled was great. I tried them all, and all were good. Some were better; brains and intestine didn't grab me very much.

My gastritis reacted about 4 a.m., the first for me in this spicy province.

The Chinese men always have many libations. Toasting is done to everything but the paper on the wall. Most of it is in good spirited friendship. But at nearly every one of the eight or so banquets I have been to, some truly get out of hand. They drink some awful swill they call strong wine. It is most like the "grapa" I had with my Italian father-in-law. I stick with their good beer in moderation.

The chief driver and the chief manager of the guest house for the people our college helps train in English got into a who-can-drink-the-most contest. The manager had been busy, and first he had to catch up. So they poured five 2-oz. shots into a water glass which he was to drink right down. Mind you, this is pure grain spirits. Then they each poured an equal measure and started again with many challenges. A friend of the driver diverted the manager's attention and poured 1/3 of the driver's drink into his own coke. They downed that and were to start over, but several of us protested that people die that way. Prof. Li, my neighbor and good friend, wisely said we had to leave in 15 minutes. All were still shakily standing as we left. I assume they survived that one. Alcoholism is a serious problem here. I note it especially in party bureaucrats.

"Peace to All."

Gary Smith
Chongqing College of Education
Chongqing, Sichuan Province
People's Republic of China

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WHERE ARE THE AMANITA MUSCARIA GOING?



Tremendous amounts of *A. muscaria* fruit on the Oregon and Washington coasts, and it isn't going to waste. In places, the ground reportedly is littered with discarded volvas. What's going on here? A psychedelic dawning of the Age of Aquarius?

As strange as it may seem, much of it is apparently being cropped for food. According to reports at the Oregon Mycological Society Fall Foray, Italian people on the Oregon coast eat *Amanita muscaria* regularly. They peel off all the red parts, the volva, and the annulus and cook it well. The idea is that the active ingredient lies just under the cuticle, and getting rid of the veil material should also get rid of the primary source of the active ingredient.

This isn't the first report of people eating *Amanita muscaria*. At Cispus III, some people insisted they ate it every year after pressure-cooking. People in Alaska apparently dry it first and then eat it, maintaining that after it's dried it loses its toxicity.

Personally, I'm not desperate enough to try it, but it would be interesting to hear from anybody who has. How did you prepare it, and what were the effects?

MUSHROOM ASTROLOGY

Bob Lehman, LAMS

Capricorn (Dec. 22 - Jan. 19): You are plodding but thorough in your mushroom hunting. While Aries has gone off to explore a distant grove of trees and Sagittarius is busy extolling the virtues of mushroom hunting, you work your way through well-tested hunting grounds and find a respectable number of mushrooms. Your organizing and planning abilities can be valuable in making a foray successful. You make careful identifications before eating anything.



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