

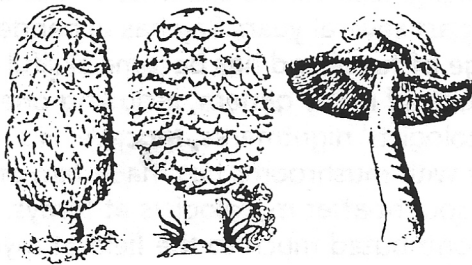
IT'S A NEW WINTER LECTURE SEASON AT SCEEC

NJMAnews

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THE OFFICIAL NEWSLETTER OF THE NEW JERSEY MYCOLOGICAL ASSOCIATION



Coprinus comatus

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EDITORS:

Alex Adams & Carol Titus

DEADLINE:

DUES:

10th OF EACH EVEN-NUMBERED MONTH
CALENDAR YEAR: \$10 EACH OR \$15/FAM
Mail checks (payable to NJMA)

TO:

Bob Peabody,

* * * * *

CALENDAR

NJMA ACTIVITIES

- NOV 02 Ray Fatto: *Fungal Inventory of an Old-Growth Forest*
- NOV 08 Culinary Dinner
- NOV 30 Holiday Party - Elections - Photo Contest SCEEC
- JAN 04 '98 Beginners' Workshop, 1 pm & Regular Meeting, 2 pm

REGIONAL AND FAR-FLUNG

- FEB 13-16 NAMA Foray 1998, Asilomar St. Pk, California (Mushrooms in Winter!!)

Directions to SCEEC (Somerset Co. Environmental Ed. Center 908-766-2489).
Route 287 to Exit 30A, North Maple Ave./Basking Ridge. Follow N. Maple Ave. as it bends left and becomes S. Maple Ave. in town. Follow S. Maple Ave. past Lord Stirling Stables. Go left on Lord Stirling Rd (Great Swamp sign on right). SCEEC is about a mile. Park in the lot, NOT in front. **Meetings start at 2 PM.**
Your contribution to refreshments (snacks or cash) is much appreciated.

STILL TIME TO ENTER THE PHOTO CONTEST.

Add to the enjoyment of this traditional event - even if you have only one slide. Gene Varney will accept slides until Nov 15 so you may send them or give them to Gene at the November 2 meeting. (See rules Sept/Oct issue)

THE REFRESHMENTS are always anticipated at this meeting. Please bring snack and finger foods to share. Perhaps you have some home-baked goodies left from your holiday feasts.

* * * * *

JOIN US AT THE CULINARY DINNER

There is an eating place near you that is unique in its cuisine and membership in our club is your ticket of admission. The company of diners is amiable and the food is exquisite. This unusual opportunity, of course, is the culinary dinners sponsored by the club and coordinated by Bob Saunders and Rhoda Sidney. The theme on Nov 8 will be Chinese (banquet type, not carryout). Bob and Rhoda ask that you call to tell them what food category you prefer or they will supply a recipe suggestion for you. The dinners are held at the Long Hill First Aid Squad building in Stirling. (Ed. No room for a map. Please call the number above for directions.)



DUES DEWS DOUZE DO'S

\$10. one year individual membership
\$ 15. one year household membership

Pay treasurer Bob Peabody (address on page 1) at the Nov or Dec meeting or send a check to him, made out to NJMA) You may include a separate check for \$17. made out to NAMA if you would like to join the North American Mycological Association and receive their newsletter, journal and membership benefits. And remember to say " tax deductible"

RAY FATTO PRESENTS OUR NOV 2 PROGRAM: FUNGAL INVENTORY OF AN OLD-GROWTH FOREST

Ray is a popular speaker and you won't want to miss his presentation. Last year Ray won the NAMA Award for Contributions to Amateur Mycology. We were pleased to see Ray Fatto who has done so much for our club over the years, receive this honor. The award was presented to Ray by Alan E. Bassette with these words. "Ray Fatto began working with fungi during the 1970's and soon became a member of the New Jersey Mycological Association. Early in his mycological career he undertook the difficult task of identifying species in the genus *Russula*, and today is recognized for his expertise in this area. Over the past several years Ray has expanded his knowledge of fungi and has become skillful in the identification of many genera, including one of most mycologists' nightmares, *Inocybe*. His familiarity with mushrooms has made him one of the most sought-after mycologists at forays. Ray has contributed much to the field of mycology and has distinguished himself as a scholar. He has written keys to the species of *Russula* in north-eastern North America, and has authored four papers, including a description of a new species of *Callistosporium*. Ray has led many forays and has conducted numerous workshops and presentations for mycological gatherings, including NEMF and NAMA forays. At the local level, Ray has been an active participant in the New Jersey Mycological Association since 1978. During this time he has served as its president, vice president, chairman of various committees, foray leader and educator. In addition, Ray maintains the herbarium of the New Jersey Mycological Association, housed at Rutgers University. Ray has become a familiar figure at foray identification and sorting tables. He is highly skilled in the use of a microscope, has excellent knowledge of microscopic features and macro chemical tests, and is continually assisting in the identification process. He is always willing to help others and to share his knowledge of the fungi. An astute observer, and an investigator, Ray is motivated by a high level of curiosity. Most of all, he is a patient and unassuming mycologist who is friend to all who have the privilege of working with him."

Fungus Fest '97

Practice makes perfect! So it's no surprise that fungus Fest '97 was a winner. For over a quarter century (26 years to be exact), this annual NJMA event has introduced the general public to the wonders of wild mushrooms.

A determined group of about 50 members worked hard to make the event a success. Adults and children alike found items of interest. In spite of the hot weather and lack of rain, the display tables were stocked with specimens and our microscope revealed their secrets. The walking trails offered a wide selection of species artfully planted by members earlier in the day, with tour leaders well exercised by day's end. The mycophagists busily cleaned and cooked *Grifola frondosa* and *Lactiporus sulphureus* mushrooms.

The "Fool-Proof Four" presentation was always well attended while the larger "New Jersey Mushrooms" slide show attracted its own audience. As always, the poisonous fungus exhibit was kept busy explaining the do's and don't's of wild mushrooms. Beginners learned at the "How to Collect Mushrooms" table. Mushroom cultivation was as popular as ever, and mushroom wool dyeing had its own special enthusiasts. The Children's Corner quickly filled with little people assembling mushroom puzzles and molding clay mushrooms; others watched wide-eyed as special guest Homer Hansen worked his magic with paper and scissors.

Business was brisk at the arts and crafts table with a best-ever offering. The publications table was also busy, with many visitors eager to learn more about our favorite subject. The number of new titles available never ceases to amaze.

NJMA was well represented at the Reception and Membership desks and, in spite of slightly fewer attendees, we gained 34 new members! Media coverage of Fungus Fest '97 in the Star Ledger, the New York Times and other print media as well as on Channel 12 TV was also excellent.

Thinking ahead, Fungus Fest '98 will be co-chaired by Frank Addotta and Grace Barbagallo. As the retiring chair for the event, I want to thank the very large number of members who made my job a pleasure in 1996 and 1997. You're all pros and it was a privilege to work with you on this important public service project.

Tamara Homer

THANK YOU TAMARA

The club is indebted to Tamara for her leadership in two years of fine Fungus Fests. Her sense of organization is impeccable and she does any job with characteristic good grace. To a person who ALWAYS goes out of her way to thank people, we extend a huge THANK YOU to her.

Green Chili with Black Beans and Mushrooms^{MM}

Juan Alvarez



INGREDIENTS

- 2 lb. dried black beans
- 3 bay leaves
- 1 medium onion, quartered
- 6 cups chicken stock
- 3 Tbsp. oil
- 3 medium onions, chopped
- 2 medium green peppers, chopped
- 4 cloves garlic, mashed
- 2 Tbsp. cumin
- 3 jalapeno peppers, chopped
- 2 Tbsp. salt
- 1 Tbsp. paprika
- 2 tsp. oregano
- 1/2 tsp. ground cloves
- 2 lb. boneless pork, cut into 3/4" cubes
- Oil or butter
- 3 cups seeded tomatoes, chopped
- 2 lb. mushrooms
- 1 stick butter

PROCEDURE

Using a 6-quart pressure cooker, cook black beans, bayleaves, onion, and chicken stock under 15 lb. pressure for 20 minutes. Drain liquid to 1/4" above beans. Set aside. Using a large skillet, saute green peppers and chopped onion until onions are soft. Stir in garlic, cumin, jalapeno, salt, paprika, oregano, and ground cloves, and cook for 1 minute. Transfer to black beans.

Using a large skillet, brown half of pork in oil or butter. Transfer to black beans. Brown remaining pork. Add tomatoes. Cook 2 minutes; then transfer to black beans. Cook all of above under 10 lb. pressure for 10 minutes. Adjust seasoning to taste. Saute mushrooms; add to black beans, and serve.

SERVINGS: 8

SOURCE: *The Boston Globe*

Mushroom Barley Soup

Diana Abrashkin



INGREDIENTS

Quantities = "Whatever you have around."

- Mushrooms
- Butter
- Garlic, onions, salt, pepper
- Dried lima beans, green & yellow split peas, barley
- Water & chicken stock
- Carrots & celery
- Other vegetables of your choice

PROCEDURE

"Very haphazard". Saute mushrooms in butter with garlic and onions. Add water and chicken stock and cook for a minute or so. Remove the mushrooms, so they will not overcook. Add the seasonings and dried ingredients, and simmer until cooked (1-2 hours). Return the mushrooms to the pot and heat just before serving.

SERVINGS: Varies with amount of ingredients.

SOURCE: Accident

—from the booklet *Recipes from Culinary Meetings 1993-1994*
Boston Mycological Club

BOOK REVIEW by Tiakko Stijve**PSILOCYBIN MUSHROOMS
OF THE WORLD** By Paul Stamets

AN IDENTIFICATION GUIDE. TEN SPEED PRESS, BERKELEY, CALIFORNIA, USA. DISTRIBUTED IN THE UK AND EUROPE BY AIRLIFT BOOKS. ISBN 0-89815-839-7, 243 PAGES, ILLUSTRATED WITH COLOR PRINTS. PRICE \$ 24.95

Towards the end of the 70's, when interest in the possible occurrence of psilocybin mushrooms in Europe was just awakening, there was hardly any literature on the subject except for Roger Heim's now classic treatise, "Les Champignons Toxiques et Hallucinogènes". In this book, Heim presented *Psilocybe semilanceata* and *Panaeolus subbalteatus* as psilocybin-containing mushrooms to be found in Europe, but analytical data were still lacking then.

On the other hand, in the USA existed already a whole subculture surrounding the recreational use of at least half a dozen of these mushroom species. A stream of pamphlets and field guides, often of poor quality, provided information on the identification and location of the hallucinogenic fungi growing in North America.

A book that distinguished itself favorably from all those amateurish publications was Paul Stamets' *Psilocybe Mushrooms and their Allies*, published by the Homestead Book Company in Seattle, WA. This guide did not only give user-friendly keys for the genera *Stropharia*, *Psilocybe* and *Panaeolus*, but also excellent macroscopic descriptions of the individual species, illustrated with very good color prints. The reviewer knows that this book has been most helpful to those European mycologists who wanted to find out whether these mushrooms could also be found in their respective countries. Now, some twenty years later, not only has the number of known hallucinogenic psilocybes and panaeoli increased dramatically, but on both sides of the Atlantic Ocean it was discovered that psilocin and psilocybin also occur in representatives of unrelated genera, such as *Conocybe*, *Gymnopilus*, *Pluteus*, *Inocybe* and even in *Galerina*.

It was therefore time to bring out a new, updated book on the subject and it was again Paul Stamets who has taken the initiative in writing a worldwide guide. After short introductory chapters of subjects such as history, ecological aspects, worldwide distribution of psilocybin mushrooms, the various types of habitats where you can find them, the greater part of the book - characterized by yellow pages - is devoted to major and minor psilocybin genera. The part on psilocybe and panaeolus, in which most psilocybin-containing species are found, is undoubtedly the most interesting. Not only are there good descriptions of macroscopic and microscopic characteristics, but also high-quality color prints which are not to be found elsewhere. The illustrations are definitely better than those of Guzman's well-known guide to the genus *Psilocybe*. As far as current knowledge permits, the contents of the active principles of psilocybin, psilocin and baeocystin are listed for each species. There are also some descriptions of inactive species which are often erroneously considered hallucinogenic, e.g. *Panaeolus foenesecii* and *Psilocybe coprophila*.

Of course many of the 63 psilocybes described by Stamets are tropical or subtropical species and there are even a few which have only been discovered quite recently. For example, *P. samuiensis*, which Guzman, Allen and Merlin discovered on the Thai island, Koh Samui, and a strongly blueing species, *P. natalensis*, which was reported from South Africa by Gartz et al.

The chapter on "Minor Psilocybin Genera" is, as far as the hallucinogenic *Inocybe* species are concerned, mostly based on the papers by Drewitz, Gartz, and Stijve & Kuyper. For someone familiar with the literature, there are no surprises. The lack of photos of these *Inocybes* is somewhat disappointing. The occurrence of psilocin / psilocybin in some *Gymnopilus* species is still a matter of conflicting reports. According to the reviewer's experience, a positive or negative result could well depend on the time interval between collecting the mushrooms and their chemical analysis. For example, fresh, strongly blueing *G. purpuratus* contains much psilocin, which can disappear completely in about two weeks, even from dried material.

In contrast to his earlier book, Stamets now makes propaganda for the recreational use of psilocybin mushrooms, although there is the usual disclaimer from the editor who "does not advocate violating the law". It is, however, significant that Stamets' first book was prefaced by the mycologist Gaston Guzman, whereas the new book now has a foreword by medical doctor Andrew Weil, who has gained some notoriety by his mystic and pseudoscientific writings. We should therefore not be surprised that this book subscribes to certain farfetched theories, e.g. the faculty to biosynthesize psilocybin is seen as a competitive evolutionary advantage, because the consumers help in disseminating the spores, thus propagating the species. Moreover, the author states that psilocybin mushrooms are carriers of messages from Nature about the health of the Planet and their widespread consumption in the 70's prompted the ecological movement! Furthermore, it is repeatedly emphasized that, during the last 20 years in the USA, *Psilocybe* mushrooms are increasingly found in places wherever people congregate: in parks, lawns by housing developments, schools, churches, etc. Admittedly, Stamets also mentions the role that the growing use of wood-chips plays in parks and gardens to create a suitable habitat for species such as *P. stuntzii* and *P. cyanescens* in parks and gardens.

The author rightly points out the need to identify properly the psilocybin mushrooms one wants to collect. Indeed, severe cases of poisoning have occurred in people who were foolhardy enough to randomly ingest little brown mushrooms. Amateur collectors should be able to distinguish the highly poisonous amatoxin-containing *galerina* species from psilocybes. For this purpose, the chapter on the dangers of mistaken identification has a very good photograph depicting *Galerina autumnalis* and *Psilocybe stuntzii* growing side by side

In the chapter "Good tips for great trips" the reader finds - as usual in this kind of literature - much talk about the great experiences offered by psilocybin mushrooms. The dangers of actually ingesting these conscious-altering fungi, especially to nervous persons, are played down. Stamets even cites a psychiatrist who in 20 years of medical practice never had a patient complaining of a bad mushroom session. We should, however, give the author credit for

"Magic Mushrooms" New Brunswick Customs Style

By Thomas Maler

At this time of the year, we have only dried or pickled mushrooms, along with few cherished fungophile memories of the past summer and fall. I am not quite sure whether to pickle or dry the memories of our summer vacation trip to New Brunswick, thanks to the good customs folks at St. Stephen, N.B. border. One thing is for sure, just like the dry mushrooms, these memories will last forever.

In retrospect, our experience with New Brunswick customs officials is probably nothing that unusual. At the time, however, it seemed like it was going to affect our upcoming sea kayaking vacation on New Brunswick's Grand Manan island.

We began our trip at the cottage on Lake Kassabog, where, much to my delight, my son Tim found some *Craterellus fallax* (Black Trumpet). Next day, I dried them and put them in between two paper plates taped together with masking tape and stuffed them under the front seat in the car. Off we went.

Because we went white water rafting on the Ottawa river the first day, we made it only to Cornwall, stayed there overnight and crossed into the U.S. the next morning. That was a mistake. We should have supported the U.S. instead of the Canadian tourist industry. The next night, we camped under Mt. Washington in New Hampshire, where I stubbed my toe by walking into a rock in the dark and my wife Christine got a speeding ticket next morning.

Not being easily deterred, we went on and reached the famous St. Stephen crossing into New Brunswick at about 9:00 p.m. N.B. time, after buying one bottle of Kahlua Cream at the duty-free store. We declared the bottle, of course, and the customs man in the booth asked us how long we had been in the U.S. Christine, who was driving, replied "two days", which was true. The suspicious man wanted receipts for where we stayed, which we did not have and so he sent us into the office. There, our troubles began. The customs official, Bonnie Doughty, was every peaceful citizen's nightmare.

Christine readily explained that, although we had stayed the first night in Canada and the next night in the U.S., we did spend two days in the U.S. Apparently, that is not good enough - you must spend 48 hours in the U.S. to qualify for duty-free merchandise. We were informed that we had committed a terrible, horrible criminal offense and that our bottle was going to be confiscated. We were not allowed to pay the duty or anything else. At this point, I was glad she did not suggest that children's aid should take away our son and we were to go to jail for the rest of our lives.

The woman then proceeded to search the car and recovered the paper plates with the dried mushrooms. She asked what they were and I replied that they were dried Black Trumpets we had picked at our cottage in Canada. She was unimpressed by my explanation and told me "I think these are magic mushrooms" without any shred of evidence and without having any clue as to what they were.

While she was searching the car, she asked me where I was from. I told her and she asked me whether I have been "back home." I informed her that my home was Canada and she then asked me the same thing again. I am still wondering whether she was naturally so thick or if it was a blatant display of discriminatory attitude.

She then victoriously marched inside with her trophies, one bottle of Kahlua Cream and some dried "magic" mushrooms. By then, it was approximately 9:45 p.m.

I was told that it would take a while to fill out forms and she

searched Christine's purse, took my driver's license and ownership and disappeared into the depth of the building for about 45 minutes. After she reappeared, we had to fill more forms, sign a transfer of the bottle to Queen's warehouse and witness the pouring of it into the bathroom sink. (I now wonder if the Royal troubles stem from the Queen's warehouse being full of liquor, or have I been watching too much AirFarce?)

By the time the drug squad took over (Bonnie Doughty and her supervisor), it was around 10:00 p.m. A discussion followed, with more accusations of magic mushrooms and my fruitless explanations that they were choice, edible mushrooms from our cottage in Canada. We were told that they would have to test the mushrooms and I agreed. Another half hour later, I asked them to keep them for the tests and mail them to us when they had finished and to let us go, so we could find a hotel, put our tired 9-year old to bed, since we had to catch a ferry to Grand Manan at 9:00 a.m. the next morning.

My request and its many repeats much later were fruitless. The officials returned a few times, saying that the tests were negative, but they did not let us go. I searched the car for my Lincoff Audubon Society book, but was unable to find it. In the meantime, the officials were running around aimlessly and relentlessly holding the paper plate with the mushrooms, while refusing to let us go. They hijacked a poor unsuspecting Agriculture Canada guy from P.E.I., asking him whether he knew these "magic" mushrooms. The man, who obviously knew a lot about potatoes, just told them that he thought they were ordinary mushrooms.

The next witness was a U.S. customs official, who also could not identify these suspicious black things as "magic." Christine now stopped urging me to be nice to them, because it did not help. I was also hopping mad because they totally lacked any consideration for Tim, who was very tired and upset. I started demanding that they let us go immediately and all of a sudden the drug squad supervisor handed me the paper plate and told me we could go.

By now it was 11:30 p.m. and the man who had originally sent us over was on his break smoking a pipe. He told us that he was sorry that he had started this whole ordeal. He even phoned around trying to get us a motel room, but everything was full. We finally left the customs chamber of horrors at quarter to midnight. I stopped at Tim Horton's to get a coffee, since we had no idea how long we'd have to drive to find some accommodations. Lo and behold, there was the agriculture guy from P.E.I., entertaining the donut shop with our story. He told me he could not believe what he saw. We found a dirty motel in the same town and stayed there, since it was well past midnight. I did not even bother to search for cockroaches.

The next morning we made the ferry on time and the rest of the sea kayaking trip on Grand Manan, as well as the journey home, were uneventfully beautiful. On the way to Grand Manan, I kept thinking of an old, great movie by Lina Wertmuller, called "Seven Beauties." The villain in this movie was a horrible female Nazi concentration camp commandant and a hero of the movie, played by Giancarlo Gianini, was making overtures to her, so he could get some food to help him survive.

Mycelium 23:1, Myco. Soc of Toronto

WHERE DO MUSHROOMS RESIDE?

Mycophagists spend a lot of time searching out the Spring morels. Perhaps the season of the year finds the hunt as pleasant as the find. I emphasize "hunt," because much time is spent searching for these delicacies. We spend much more time searching than finding. Habitats for mushrooms vary a lot. Most mushrooms are very selective in their preference for a substrate. Mushrooms are parasitic or saprophytic by necessity, since they cannot make their own food. Many have developed relationships with certain herbaceous plant roots (mycorrhizal associations) or wind up devouring their hosts as a parasite.

Morels, although favoring certain habitats more so than others, are not restricted to just these sites. They appear in old apple orchards, elm populations, ash and oak woods, railroad right-of-ways and at times in unusual and unexpected places. If you have taken up the study of fungi for culinary purposes only, be sure to do two things; learn *Amanitas* first and foremost, then avoid them. Secondly, understand habitat and mycorrhizal relationships of certain good edible mushrooms.

Unlike floundering about hunting morels, hunting good edibles where they grow can be time saving and rewarding. This is especially true of mycorrhizal relationships where the mushroom is more exact as to where it grows. Along with understanding this habitat relationship, seasonal appearance is just as important. The environment must receive medium to copious amounts of rainfall. If you drift into a drought or even into a semi-drought situation, you may as well do your mushroom hunting at the supermarket. Make these considerations part of your hunt: is it wet enough? Any good mushroomer knows that damp conditions are a must for success. Secondly, know what you are seeking and when it grows, and furthermore, where it grows. Some cases in point: if you like

hickory jacks, *Suillus luteus*, here in Ohio you should frequent pine plantations; either red or white pine plantations will produce.

While you are in this habitat keep your eyes open for *Suillus granulatus* and *Suillus brevipes*. They all frequent this same community. *Suillus luteus* loves grassy areas under pines. If you can find large old pines in your local cemetery the lawn areas beneath these trees teem with hickory jacks. *Suillus granulatus* and *S. brevipes* prefer the pine duff rather than the grassy areas. This is a mycorrhizal relationship between tree and mushroom and this is where to look. Peel the cuticle of these three, and the tubes too, for a more acceptable texture when sauteed. October is the month.

Want shaggy manes? Choose two to three year old (and older) construction sites where the finished lawn areas were seeded (not sodded) over lousy top- and subsoil; mostly of the clay types. You will learn to recognize this grass as a broader bladed type different from the sodded variety and it is common along highway construction sites. Any hard soil types are good.

Highway borders, old clay recreational areas such as ball diamonds and clay-courts are good. Look around hard packed manure areas such as your local fairground horse barns. But trust me: nothing out-produces the crude lawn plantings of relatively new construction sites. In Ohio, venture forth when cooler; usually rainy periods in early October are productive. Never collect shags that are turning pink, then black at the margin of this tubular cap, unless you want to run for home and the kitchen. You might call ahead and have your resident chef get the skillet hot for your arrival—there is not much time! Also, never cook wet *Coprinus*. Halve the caps longitudinally and lay them on absorbent cloth or paper towels until dampness is reversed. Wet shaggy manes will cook up mushy every time. Pop them, lightly dredged in flour, in hot oil or butter and turn them frequently until brown on both sides.

Another specific myco-connection is the hen of the woods, *Grifola frondosa*, and its association with oak. Look at the base of large, old oak trees, and the age of the tree is very important in my opinion. Seek out the very large old and tired types and visit them from late September to mid-October; occasionally later. Just move from tree to tree; they are nowhere else. Obviously you will need to recognize *Quercus* (oak) which may be more difficult than recognizing the mushroom.

One may want to seek out the pink bottom during the September/October mushroom season. Don't hunt your favorite woods; better to take your basket along on your golf cart. *Agaricus campestris*, broken into English, means meadow or pasture type mushroom. This includes lawn and golf course habitats. Although not so exotic as some of the other wild mushrooms, probably because of years of its presence at the grocery store, it remains one of the better edibles. A hopeful mushroom hunter should learn to recognize this species and then hunt its correct habitat during a cool, wet, fall season.

One looks for the wine *Stropharia* in both the spring and fall and most successfully in wood chips of landscape plantings. Oysters are sporadic but enjoy cool weather and often grow on poplar trees, paper birch and aspen. Many summer collections produce lesser *Pleurotus* species, and although quite edible, they may not be *P. ostreatus* itself. Anyhow, spring and fall, cool and wet, offer the best collections.

The point is to stop floundering about seeking mushrooms at the wrong time and the wrong place.

Edited from an article by Dick Grimm, via *The Mushroom Log*, Volume 24, No. 6, November/December, 1996, Newsletter of the Ohio Mushroom Society

BOOK REVIEW

Toads and Toadstools: The Natural History, Folklore, and Cultural Oddities of a Strange Association

by Adrian Morgan

Published by Celestial Arts, Berkeley, California

1995; 208 pp

ISBN 0-89087-777-7 (soft cover)

\$24.95

"Consider the curious case of the toad and the fungus . . . Why should a fungus be named for a toad? Toads are not known to eat fungi, nor do they share any behavioral, biological, or ecological traits. Toads certainly do not seem to view fungi as stools. So when considering the case of this curious nomenclature, there is little apparent logic. However, this decidedly odd coupling appears all over the world, on every continent save Antarctica, and in a bewildering number of cultures across a staggering span of time."

In this interesting new book, Adrian Morgan attempts to provide an answer to the question "how come we call them toadstools?" I won't spoil things by giving away the ending to this volume, other than to say that sometimes the process of the journey is more rewarding than the destination.

Morgan covers a lot of ground in eight chapters entitled: What's in a Name?; The Toadstool in Europe; The Toad in Europe; The Toad in Witchcraft; The Fly Agaric in Europe and Asia; The Americas; Asia, Africa, and Australasia; and The Toad and the Toadstool. If my own experience is at all indicative, some of the ground, such as the quotations from Pliny and Gerard (from *The Grete Herball*) and references to the Wasson's experiences with the religious use of *Psilocybe* in native Mexican cultures, will be very familiar to anyone who has even a passing knowledge of the cultural aspects of mushrooms. However, much of the information here probably will be new to most readers. Throughout the book, I found myself impressed with the breadth of research that went into Morgan's treatment. That is the greatest strength of the book and one that makes it interesting. The other strength is the artwork. Morgan is a talented artist and provided a large number of very fine mushroom and toad illustrations which grace the pages of the book.

Unfortunately, Morgan's skills as researcher and artist are not matched by those of Morgan the writer and editor. The text tends to be very loosely knit, rambles a lot, and jumps from place to place. Often the material I was reading did not seem to have much to do with the subject indicated by the chapter title or subheading. I believe the book would have benefited immensely from the hand of a strong editor. However, I tend to be somewhat obsessed with writing that is concise and logically flowing, so I suspect that most readers would not be nearly as bothered by the stream-of-consciousness style. A critical review by someone with more mycological expertise than Morgan would also have helped as there are many inaccuracies and potentially misleading statements about mushrooms, which leads me to be cautious about accepting unquestioned the information about toad biology.

These complaints aside, there is much of interest in these pages and I would recommend it to anyone interested in the relationships between mushrooms, toads, and human cultures. The best way to approach it is to sit back in a cozy spot with a glass of wine or cup of hot chocolate and enjoy the journey through the many historical vignettes that fill the pages. You'll come away with some interesting insights into how human beings perceive and relate to their natural environment.

Steve Trudell
Seattle, Washington

If you know of a book of general mycological interest, please have a review copy sent to Dr. Nancy Weber, Chair NAMA, Literature Committee, 2160 NW Beechwood Place, Corvallis, OR 97330-1001. A review will be published in *the Mycophile*.

FUNGI SURVIVE IN HABITATS OF EXTREME LIGHT OR TEMPERATURE

By Bill Freedman

Fungi live everywhere. Spores have been collected from the earth's outermost tropospheric regions down into the deepest layers of the soil. They permeate our food, and cluster on our skin and in our bowels. They have been found living in pores in rocks. Recovered from frigid Antarctica ice, deep lightless caves or boiling ocean floor vents, they manage to adapt and survive, finding nutrition for themselves and providing food for other organisms.

An article in the December 21st, 1996 *Economist*, "The Earth's Hidden Life", describes some of the recent fungal findings by the intrepid explorers and scientists who venture out of curiosity into gruesome caves and places on earth inhospitable to man.

In eastern Antarctica, they studied Lake Vostok, a vast fresh water 5400 square mile lake lying below the ice sheet. Not much activity is recorded there. A water molecule might persist unchanged for about 50,000 years. It might take 500,000 years from the time they arrived on the ice cap for organisms to be released from the ice to enter the waters of the lake. The lower surface of the ice melts at a rate of a millimeter per year. Ice samples contain bacteria, diatoms, algae and microfungi. It is suggested that the fungi might have antibiotic properties.

Dr. David Gilichinski, at the Russian Academy of Sciences at Pushchino, believes that some of the bacteria have stayed alive in this barren environment for 3 million years. When they have figured out how to take sterile samples from the ice without polluting it, they will be able to look backward into time as they analyze the metabolic and genetic patterns at work within these ancient bacteria. The living things in Antarctic are really living the most leisurely life on earth. The cold reduces their metabolic rates to very low levels. It sounds very boring to me.

It is quite understandable that, with temperatures as low as minus 45°C, living inside something like a rock would be more comfortable. David Wynn-Williams of the

British Antarctic Survey found that temperatures within the rocks are about 0°C. It is humid, as moisture seeps through crevices to the inside. A small amount of light filters through, allowing black lichens, the first of three layers of organisms lying one millimeter below the rock surface to photosynthesize and manufacture sugars which serve as nutrition for the second layer made up of fungi. The lichen pigment, melanin, protects them from the ultraviolet rays of the fiercely bright sunshine. Below this, a third layer of algae exists which is able to manufacture products with 180 times less light than other plants. So slow is the metabolic rate, that it is estimated that one molecule of carbon dioxide taken from the air for photosynthesis remains in the tissues of this community for 10,000 years before being released again into the atmosphere. These communities are common on the exposed sandstone fringing the polar plateau. There now, you have the secret to long endless life. Don't move or do very much. Keep cool.

Dr. Torgay Unestram of the Swedish University of Agricultural Sciences has reported, (see *Mycena News*, January 1996), the process by which fungi and bacteria can glean a living from granitic rocks. This can be easily demonstrated by culturing bacteria and fungi on agar plates containing finely ground rock. As the colonies use the material to grow, they remove the opaque rock from the agar and it becomes clear. Here is another example of how fungi and lichen can live inside of rock ("endolithism").

Mobile Cave, in Southern Romania, near the Black Sea, is a truly dark and dank place. At 200 meters below the surface, it supports its own unique living community. Entered in 1986 for the first time in 5-1/2 million years by Cristian Lascu of the Emile Racovita Speleological Institute, it is totally silent and dark. Living at a depth of 200 meters there are 48 kinds of organisms, including fungi, some only found in this site. Some areas are dry and there

are pools of warm water at about 21°C. Little oxygen, but much poisonous carbon dioxide and hydrogen sulfide (the odor of rotten eggs) make it a dangerous place in which to be. "Woodlice and millipedes graze on mats of bacteria and fungi." Leaches, water scorpions, spiders, centipedes and shrimp grope and sense each other competitively in the darkness for food. The water doesn't run or drain in from the surface. It comes from below and may be as old as 25,000 years. In the water are three substances from which the bacteria, the base of the cave food chain, can derive energy and manufacture organic compounds. Hydrogen sulfide provides sulfur from which the bacteria remove electrons for energy. Ammonium ions provide the nitrogen for proteins, and methane contributes carbons needed to make carbohydrates. Using carbon dioxide the microorganisms behave like plants, producing products without sunlight and mimicking photosynthesis.

In 1996 we have been impressed with many exciting observations of ocean floor and endolithic microorganisms deriving their sustenance from non-photosynthetic sources. Indeed, the very basis of our understanding of how life may have begun has been altered by these findings. The "Kingdom" of more primitive Archeal organisms has been introduced and now precedes in time the appearance of algae and the protozoans. We are now threatened with the reorganization of all living things into three "Kingdoms", in place of the five we have previously been taught. As 1997 begins, we look forward to many new discoveries and challenges which will force us in the future to alter our view of the world of the past.

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Mycena News, February 1997

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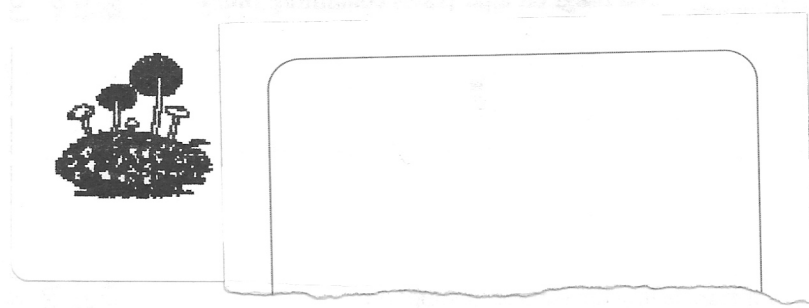
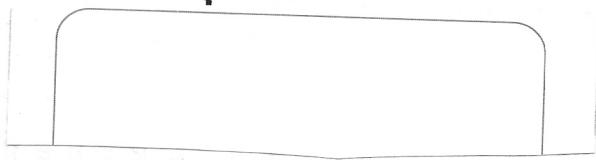
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