

The Wild Edible Mushrooms

Introduction

The next two lectures will be concerned with the mushroom eating. The term "mushroom" is used here in a broad sense as used in popular mushroom guides and include members of the Basidiomycota that produce fruiting bodies and some members of the Ascomycota as well (Figs. 1-4).



Figures 1a-d: Examples of Ascomycota "mushrooms". From Left to right, *Sarcoscypha mesocysta*, *Leotia lubrica*, *Tuber magnatum* and *Morchella esculenta*.

The latter, as you should recall, produce asci and ascospores (Fig. 2a) during sexual reproduction while mushrooms and other members of the Basidiomycota produce basidia and basidiospores (Fig. 2b). In addition, not all members of the Basidiomycota are mushrooms with stalk, caps and gills. There are coral fungi (Fig. 2c), polypores (Fig. 2d), puffballs (Fig. 2e) and boletes (Fig. 2f), just to name a few. The boletes are a group that we have not previously discussed. As you can see in the figure below, boletes are very similar to mushroom in appearance. The most obvious difference being that they have pores, as the polypores, instead of gills. However, instead of having fruit bodies that are leathery to woody, boletes are fleshy like mushrooms and there are a number of highly desirable species, with respect to their edibility. Obviously, there are species such as the *Pycnoporus sanguineus* and *Geastrum indica* that cannot be eaten because of the texture of their fruitbodies and the powdery masses of their spores, respectively, but they have traditionally been included in popular mushroom guide books since one of the goals of the authors of such books is also to show the reader the diversity that exists in mushrooms.



Figures 2a and b: Asci and ascospores and basidia and basidiospores, respectively. Figures 2c-f: *Ramaria fragilima*, a coral fungus, *Pycnoporus sanguineus*, a polypore, *Geastrum tripex*, a puffball and *Suillus salmonicolor*, a bolete, are examples of members of the Basidiomycota that you may not think of as being "mushrooms".

Although the topic of eating mushroom is inevitably tied to mushroom poisoning, we will cover this

topic in a later lecture. This is a very fascinating topic because there are many people that are intrigued by eating wild mushrooms and will go out, daily, and forage for them in spite of the possibility that they may inadvertently eat a poisonous mushroom. Despite this danger, the number of people, in this country, consuming wild mushrooms increases each year. However, while incidents of mushroom poisonings continue to occur each year, sometimes with fatal results, mushroom poisoning is still not a major problem in the United States. Even with an increase in the number of people going out to collect mushrooms, there is no evidence that the number of incidents of mushroom poisonings have increased in recent years.

The practice of eating mushrooms probably began during the hunting and gathering period, in our prehistory. They were collected along with fruits and berries, as well as other plant material that could be consumed. Also, like plants the gatherers learned which ones were edible and which were poisonous and if there were other uses for mushrooms, i.e., medicinal or religious uses. However, unlike plants, mushrooms must have been shrouded in mysteries since unlike the plants, there was not an obvious way in which they could be reproduced. Even much later, during the dark ages, mushrooms became more firmly embedded in the mythology of the supernatural. Many myths arose because of their seemingly supernatural characteristics and strange habitat. Their growth was rapid and they seem to suddenly appear overnight as if from nowhere. Thus, their origin appeared to be magical. They sometimes formed circular patterns or "rings" as in *Chlorophyllum molybdites* where the grass is greener inside the ring (Fig. 3a). Some glow in the dark (Figs. 3b-c). Many have bizarre shapes, and are ephemeral. They became part of the lives of fairies, elves and witches. This concept is evident even today in common name of mushrooms, such as "The Fairy Ring Mushroom" for *Marasmius oreades* (Fig. 4a) and "Witches Butter" or Fairy Butter for *Tremella mesenterica* (Fig. 4b).



Figure 3a: Fairy ring" of *Chlorophyllum molybdites*. Note grass is greener inside the fairy ring.
Figure 3b-c: Pictures in middle and on right are of *Omphalotus olivascens*. This species is noted for its gills that glow in the dark. Middle picture is cluster of mushrooms in its habitat, growing at base of Madrone tree. Picture on right is the same cluster of mushrooms showing how the gills can glow at night.



Figure 4a: *Marasmius oreades*, "The Fairy Ring Mushroom".



Figure 4b: *Tremella mesenterica*, "Witch's Butter".



Because so little was known about mushrooms, many misconceptions concerning the edibility of mushrooms have developed. Some of the more common ones are briefly discussed below:

- **There is a fool-proof test for distinguishing edible from poisonous mushrooms.** The most common ones that can be heard are that "a poisonous mushroom will turn silver black while it is being cooked", "if you can peel the cap of the mushroom it is safe to eat" and "observing which mushrooms foraging animals consume will tell you which species are safe to eat". While there are some generalizations that can be made within certain groups of mushrooms, there is no fool-proof test that can be used for all mushrooms. Those species of mushrooms that are edible are known to be edible because someone at one time had tried it and discovered it to be safe to eat.
- **Most mushrooms are poisonous.** Of the thousands of species known, perhaps 60 or so are poisonous, and of these only a handful will be fatal if consumed (these numbers will vary depending on your source). However, it does not require a lot of mushroom to poison a lot of people. In Europe, of those that die mushroom poisoning, probably 90% die as a result of mistaking *Amanita phalloides* (Death Cap) for *Amanita calyptroderma* (Coccora). The remaining species, however, are not necessarily good to eat. I am using edible here to mean non-poisonous and not necessarily good to eat. Thus, an edible mushroom may have a strong bitter, peppery or some other unpleasant taste, be bland or have no taste at all.
- **There are a large number of people that die from mushroom poisoning each year.** "Large" is somewhat ambiguous here. If we are talking about the number of people that go out collecting for mushrooms each year, in this country, then the number of people that die as a result of mushroom poisoning is few relative to that number.
- **Poisonous mushrooms must taste bad.** As indicated above, many mushrooms that are non-poisonous may have a very bad taste. The opposite can also be true. *Amanita phalloides* is said to have a quite pleasant taste, but is one of the most deadly species of poisonous mushrooms.
- **You can be poisoned by touching a poisonous mushroom.** As deadly as some toxins may be, touching the mushroom is harmless. The harmful toxins in mushrooms must be consumed in order to harm you.
- **Collecting mushrooms for consumption is unsafe and even experts have died from picking the wrong mushrooms.** This last misconception is the one that continues to be perpetuated by the news media every year. Probably every year, you can read a headline that goes something like

"Expert Mushroom Hunter Dies From Eating Deadly Mushroom". However, upon closer examination of such a story it is often the case that the person that died is far from being an expert. Even those who are avid collectors that have been foraging for wild mushrooms, for only a short period of time, are unlikely to die from mushroom poisoning, if they have even had a minimum of training in the do's and don'ts of mushroom collecting and if common sense is used. There are a number of species that are very good to eat that cannot be mistaken for other species. If collectors stick with those species, mushroom poisoning is highly unlikely. New species can be tried through interaction with other collectors who have eaten other species.

- **Species determined to be edible are always safe to eat.** Whenever a new species is tried for the first time, even if it is one that is highly regarded and is said to be being very tasty, it is best to be cautious. Try only a few bites and wait 24 hours before consuming more. There are a vast number of compounds that occur in wild mushrooms that may cause adverse reactions, when consumed by a few individuals, but are safe for the general public. There is also the possibility of an allergic response to a particular species. Other precautions that should be taken:
 - When preparing mushrooms for a meal, always inspect the mushrooms to determine if it is firm and fresh. Bacterial and fungal decomposition may be taking place in old mushrooms.
 - Avoid eating raw mushrooms. Many edible species have toxins that are heat sensitive and will be rendered harmless by cooking the mushroom. Also, the cell wall of mushrooms is composed of chitin, which the human digestive system cannot break down. must also be degraded by heat so that we can absorb nutrients within cells. If the cell walls remain intact, the nutrients in the mushrooms will simply pass through our digestive system. Cooking will break down the cell wall and release its contents, which are digestible.
- **Mushroom are of no nutritional value.** Although mushrooms will never be one of the world's staples, it has been a food supplement in various cultures. Nutritionally speaking, mushrooms fall between the best vegetables and animal protein source. Their protein content may vary anywhere between 15-40% of dry weight (keep in mind that mushrooms are more than 90% water). However, all essential amino acids are present in mushrooms, as well as water-soluble vitamins and all the minerals that our bodies require are present. A generous serving of mushrooms (0.5 lb) of fresh mushrooms provides approximately 70 kcal.

Why Eat Mushrooms?

While some people may hype the nutritional value or even medicinal value, of mushrooms, as the reason for consumption, that does not appear to be the main reason for going out to collect wild mushrooms. Presently, there are a good number of species that have been cultivated. Many of these have had research carried out indicating their high nutritional value as well as medicinal value. So, why not eat only cultivated mushrooms rather than taking the risk of possibly being ill eating an unsafe mushroom or perhaps even being fatally poisoned? As far as individual collectors are concerned this seems to be an impossible question to answer. Perhaps, it is the thrill of the hunt, or the idea of going back to nature and collecting non-cultivated food. There are probably numerous reasons as to why an individual would participate in collecting and eating wild mushrooms. However, if we look at this question from a cultural perspective, according to R. Gordon Wasson, the father of **ethnomycology** (in its simplest definition it is the study of the relationship between people and fungi), how readily a person will collect and consume wild mushroom is dependent upon the culture in which they were raised.

Wasson believed that cultures could be divided into two categories, with respect to mushrooms: 1.) Those that are **mycophilic** may regard mushrooms as the epitome of gastronomy, and 2.) Those that are **mycophobic** may despise and regard them all as being poisonous and would surely cross the road just to stomp the life out of them. With the exception of possibly a single species that has been cultivated (*Agaricus bisporus*), those cultures that belong to the latter category will usually have nothing to do with mushroom. While Wasson truly believed that there was this dramatic like or dislike of mushrooms, Benjamin (1995) has pointed out that there are cultures that neither like nor dislike mushrooms, with respect to their use as food. In a few cultures mushrooms have even been regarded as being magical and utilized in religious ceremonies. This is another topic that will be discussed in later lectures.

The observation that different cultures may vary as to their attitudes concerning mushroom consumption was made in the late 1920s by R. Gordon Wasson and his wife Valentina, during their honeymoon in the Catskill Mountains, in New York State. A somewhat humorist recount of this observation was made by Wasson, in 1968, in his book, *Soma, The Divine Mushroom of Immortality*:

We had been married less than a year and we were off on our first holiday, at Big Indian in the Catskills. On that first day, as the sun was declining in the west, we set out on a stroll, the forest on our left and a clearing on the right. Though we had known each other for years we had never discussed mushrooms together. All of a sudden she darted from my side, with cries of ecstasy she flew to the forest glade, where she had discovered mushrooms of various kinds carpeting the ground. Since Russia she had seen nothing like it. Left planted on a mountain trail, I called to her to take care, to come back. They were toadstools she was gathering, poisonous, putrid, disgusting. She only laughed the more: I can hear her now. She knelt in poses of adoration. She spoke to them with endearing Russian diminutives. She gathered the toadstools in a kind of pinafore that she was wearing, and brought them to our lodge. Some she strung on threads to hang up and dry for winter use. Others she served that night, either with the soup or the meat, according to their kind. I refused to touch them.

After this incident, the couple talked about the difference in their attitudes toward mushrooms. Upon further conversations with close friends, from various cultures, they discovered a relationship between their ethnic identity and their like or dislike concerning mushrooms. Their fascination with this topic would turn out to be a life-long interest and would lead to the origin of a new field of study, ethnomycology. Some of the attitudes of different cultures are briefly summarized, below, from Benjamin (1995), to demonstrate some of these differences.

Anglo-Saxon

Historically, the British and their colonies, i.e., English-speaking cultures were widely recognized as being mycophobic or at least not very interested in consuming mushrooms. It is also true that these cultures are for the most part reliant upon domesticated food rather than foraging for wild food. Those individuals in these countries that may have interest in collecting wild mushrooms as well as plants for consumption are usually the descendants of Asian, and Slavic cultures of Eastern Europe and Russia. In the United States, such people are usually looked upon as being eccentric.

Mushrooms were often closely associated with toads, snails, snakes, spiders and witches, in Western mythology. Although witches have never been a very popular figure in any country or cultures in which they have been recognized, it was only in some countries where a deep-seated fear of them existed. This aversion may be related to the association of witches with the devil. It was primarily in the

Germanic, Celtic and Anglo-Saxon countries such as Germany, Switzerland, Scotland, England, and subsequently America that witches were actively and systematically persecuted.

The origin of this mycophobic attitude for any country is unknown. However, that it is a deep seated response can be seen by its expression in the English literature for centuries:

They are all very cold and moist and therefore do approach unto a venomous and mothering faculty and ingender clammy and cold nutriment if they be eaten. – John Gerard, *Herball or Generall Historie of Plantes* (1597)

But whatever dressing one gives to mushrooms, to whatever sauce our apiciuses put them, they are really good but to be sent back to the dung heap where they were born. – Louis de Jacourt, *Champignon* (1753)

It is tempting to say that such writing may have shaped the attitudes of the English. However, this is unlikely since most people of that time had no access to such writings and few would have been able to read it if they had. It is speculated that the sexual connotations associated with some mushroom led to their rejection by a prudish Anglo-Saxon culture. Undoubtedly, the phallic aspects of many mushrooms did not go unnoticed. Certain species were also regarded as aphrodisiacs. While this may be a reasonable argument when applied to the period in history of Victorian England, it does not explain the mycophobic attitude of its earlier and later history nor does it explain this same attitude in America

One particular mushroom was even regarded as being obscene to the morals of Victorian England, *Phallus impudicus*, one of the many species of stinkhorns. However, it is obvious that it is not the particular species, but rather the resemblance of any species of stinkhorn to the male organ (Fig. 5) that upset Victorian England.

In our native woods there grows a kind of toadstool called in the vernacular The Stinkhorn (though in Latin it bears a grosser name). The name is justified for the fungus can be hunted by scent alone, and this was Aunt ETTY's great invention. Armed with a basket and a pointed stick, and wearing a special hunting cloak and gloves, she would sniff her way through the wood, pausing here and there, her nostrils twitching when she caught a whiff of her prey. Then with a deadly pounce she would fall upon her victim and poke his putrid carcass into her basket. At the end of the day's sport the catch was brought back and burnt in the deepest secrecy on the drawing room fire with the door locked – because of the morals of the maids!! – Gwen Raverat, *Period Piece* (1952)





Fig 5: *Phallus ravenellii*, one of the many species of stinkhorns that resembles the male organ and was the reason for it being an obscene fungus in Victorian, England.

An example of mycophobia can even be found in a children's story of Babar the Elephant, by Jean de Brunhoff. Babar the Elephant is a famous series of French children's stories that first came out in 1931. The first part of the story tells of how Babar was orphaned and then became king after his mother was killed by a hunter and his father died from mushroom poisoning:

When Babar was young and lived in the jungle, his mother was killed by a hunter. The hunter was just about to capture Babar, when Babar quickly ran away into the forest and managed to escape. After a few days, he came across a town with many big buildings. There he met a kind old lady who adopted him. In this town, Babar bought clothes, was educated about the ways of humans and quite enjoyed himself. The years passed by quickly and it wasn't long before 2 years had elapsed since Babar had run away from the forest. He began to miss the jungle and longed to play with his relatives and friends. One day, as he and the old lady were walking down the street, they saw 2 young elephants running along. They turned out to be Celeste and Arthur (Babar's cousins). On seeing them, Babar ran and embraced them. He told his cousins of his life in the town and he decided to return to the forest with his cousins. Meanwhile, Arthur and Celeste's parents were very worried about their children's disappearance. They organised a big search party. A little bird, who had seen the children in the town, reported back to them and told them where their children were located. Then Arthur and Celeste's cross mothers journeyed to the town to fetch them. Once there, they were very relieved to have found them, but scolded them for running away. Babar, Arthur, Celeste and the cousins' mothers decided they'd all travel back to the jungle together. After Babar and the old lady exchanged tearful goodbyes, he packed all his belongings and returned to the jungle.

Once Babar arrived, he was joyfully greeted by the elephants, but became quite shocked when hearing of an illness that had struck the King of the elephants. The king of the elephants had eaten a poisonous mushroom, become seriously ill and then died shortly before Babar had arrived. Cornelius (one of the older elephants) and some other elephant elders had been discussing who should become the new King before Babar had unexpectedly arrived. Cornelius suggested that Babar should become the king and the other elephants agreed. Babar gratefully accepted the honour and said he would marry his childhood sweetheart, Celeste.

While writings for adults may not shape the culture's attitudes towards mushrooms, they may be key element to how the children view the natural world as well as how they interpret the story they hear.

Russia and Eastern Europe

If the British are the consummate mycophobic society then Russia and Eastern Europe are at the opposite end of the spectrum. Culturally, the people in these area are Slavic, which is a branch of the Indo-European language family that includes Bulgarian, Belorussian, Czech, Macedonia, Polish, Russian,

Serbo-Croatian, Slovak, Slovene, Ukrainian and Wendish. Mushrooms play a very important role in the Slavic culture

Here mushroom collecting and eating is a favorite past time. This passion for mushroom that was first demonstrated by R. Gordon Wasson's wife, Valentina, shocked Wasson when he first observed her collecting mushrooms, but this was what began Wasson's life-long quest into different culture's attitudes towards mushrooms.

Africa

Africa appears to be generally mycophilic. There are some some regions, such as Nigeria, where mushrooms are a part of everyday life as food, charms and remedies in traditional medicine. The most sought after species is the one belonging to the genus *Termitomyces*, a genus associated with termite nests. There are also myths concerning mushrooms that are unique to this part of world. One is that if you feed a mushroom to a chicken, if it eats the mushroom, and nothing happens, it is thought to be edible, if it eats the mushrooms and vomits, it is edible with caution and if it rejects the mushroom, it is thought to be poisonous. Although there does not appear to be any logic to this myth, it should be kept in mind that this is also the case for those myths concerning mushrooms in Western cultures.

Neighboring Malawi is also a region of mushroom gourmards, whose women have knowledge of the edible and poisonous species, locally. Over 60 edible species are recognized in this area, predominantly belonging to the genera *Amanita*, *Cantharellus* and *Termitomyces*. The responsibility of foraging and identifying the mushrooms fall upon the women. Mushrooms also sold commonly sold on roadsides as well as in town and village markets.

In rural Zambia and Zaire, mushrooms are widely consumed during "hunger" months from late November through early April. A survey in the 1950s demonstrated that they were second only to caterpillars, as a food source. Although, there were a wide variety of edible species, the species selected for eating were restricted. *Termitomyces* was favored, but species of *Lactarius*, *Russula*, *Cantharellus* and *Amanita* are also eaten. Thus, consumption of mushrooms appear to be out of necessity for food than as a preferred food item. So Africa is not entirely mycophilic. Some parts of Africa will not readily eat the variety of species just mentioned, but still may have other favorites. While such areas will consume few species, they will still more readily consume the species that they recognize, unlike in Anglo-Saxon cultures.

India

The Indian subcontinent appear to be mostly mycophobic or at least do not eat mushrooms to the extent of the Asian continent. Most consumption seems to be in mountainous area of Kasmir and the Himalayas. Mushroom consumption is also common in Bengal. However, it generally appears that India lacks a culinary interest in mushrooms. One reason for this lack of interest may be that India was once a former British Colony, but it appears that this lack of interest predates British presence in India. Despite the lack of gastronomic interest in mushrooms, in the district of Kerala, mushrooms are utilized in religious ceremonies. In this district, burial monuments, resembling mushrooms, built between 2000-1000 B.C., are worshiped by present day people who also consume some of the hallucinogenic mushrooms in this area. It is believed that these mushrooms enable the user to communicate with their gods and the dead.

Native North American Cultures

Despite the large number of species in North America, Native Americans appear to be mostly mycophobic. Most tribes have never used mushrooms as a significant source of food, and in some cases are not used at all in their diets. However, Native Americans did use mushrooms for other purposes: medicinal, and spiritual, religious and ceremonial. Puffballs were often used as a means to stop bleeding or to dry out wounds. This particular use is not unique and has been used for this purpose on all continents. Puffballs are also used for healing umbilical cord, in poultices, and a lotion to treat various skin conditions.

Puffballs that grew in fairy rings were used for spiritual, religious and ceremonial purposes. They were used as incense to ward off evil spirits. No evidence that any hallucinogenic fungi were employed in any ceremonies as they were in Mesoamerica.

Europe

European cultures are generally fond of mushrooms, with the exception of Holland, which has an attitude similar to that of England, but to a lesser degree. Species favored by each country varies. The Italians prefer the porcini (*Boletus edulis*) and white truffle (*Tuber alba*); the Germans and Swiss, the chanterelle (*Cantharellus cibarius*) the Catalonians, the delicious milky cap (*Lactarius deliciosus*).

Switzerland has developed a very sophisticated level of collecting and marketing of wild mushrooms. During spring and fall seasons, there is a space reserved for sale of wild mushrooms in open-air markets. Markets are under supervision of an inspector, a local mycologist responsible to the state government. Only truffles can be sold outside of these markets. All other mushrooms must pass the scrutiny of the inspector. The most important job of the inspector is to confirm the identities of the mushrooms that are being sold by the amateur collectors, and minors are not permitted to sell mushrooms. There is a list of approximately 54 species that are sanctioned for sale. Other duties include surveillance for occasional deceptive practices. For example, soaking mushrooms in water to increase weight. Boletes must be cut in half so that customers can see the quantity of "animal protein" inside.

In Finland, people were indifferent towards mushroom eating, except in the southeastern parts of the country closest to Russia and its Slavic influence. These areas had gathered mushrooms for centuries. However, during World War II, mushroom usage, as food, increased because of the scarcity of other food stuff. Years later, the Finnish government, along with several other organizations, launched an education training program. More than 1600 advisers, and 50,000 pickers were trained from 1969 to 1983. This effort was coordinated by 22 inspectors who provided the expertise in identification. Every citizen in Finland had the rights to pick mushrooms and berries on any land, provided no damage was done. By 1979, an estimated 72% of the population was picking mushrooms. Income from sale of mushroom, locally and abroad, is untaxed and the income generated during a good year can be substantial. Thus, the mycophilic attitude of the people was acquired shortly after WWII.

South America

For the most part, mushrooms are not a major food item for the majority of the people native to this continent. In studies carried out, few indigenous people have been identified who utilize fungi as part of their diet. Among those people who eat mushrooms, there is usually an elaborate taxonomic system for edible mushrooms and allows the distinction between species that look almost identical to the untrained eye. However, the inedible ones are just said to be "no good". This practice seems to be

similar to other cultures whose mushroom knowledge is based on folk tradition.

Asia

Although the attitudes of different Asian cultures may vary, they are generally mycophilic. China has longest tradition in collecting mushrooms, not just for consumption as food, but also as an important role in traditional medicine. However, unlike most other mycophilic societies, species of mushrooms that are used in China for food and medicine are generally cultivated since the localities where these species can be collected are a long way from the densely populated agricultural areas where most people live. Thus, the Chinese do not go out to collect mushrooms as other mycophilic cultures such as the Slavic and most Europeans, but instead have become very skillful in the cultivation of the various species that they utilize. Poisoning, for this reason, is not very frequent.

Japan is similar to China in having cultivation play a large role in supplying mushrooms for the diet and medicinal needs of its people. Once again, it is because of the population living in a limited space. However, the Japanese differ from the Chinese in that they have a great enthusiasm for mushroom collecting. One species in particular, the Matsutake, *Tricholoma matsutake*, is a particular favorite. Unfortunately, in the last few decades, this species has come under pressure and is now in a serious decline due to nematode infestation in their pine forests. Taking advantage of this situation, Korea and the Pacific Northwest, from Oregon to British Columbia have developed a lucrative business supplying the Japanese market with a similar species of mushroom, *Tricholoma magnivelare* (= *Armillaria ponderosa*) (Figure 6), which is found in those areas.



Figure 6: *Tricholoma magnivelare*, a species similar to *Tricholoma matsutake*, that Japan has been importing as a substitute for the latter.

Medicinal value of mushrooms is also valued in China and Japan. *Ganoderma lucidum*, called the Ling Chi, in China and Reishi, in Japan is a highly regarded herb that was first documented in China approximately 2000 years ago. Today, it is cultivated in both countries. Another highly regarded group of fungi in Asia are the stinkhorns. Unlike in Anglo Saxon cultures, the phallic appearance here represents the power of enhancing potency and performance, and in China, *Dictyophora duplicata*, *D. indusiata* and *D. multicolor* are species of stinkhorns that are cultivated for this reason.

Australia

Australia, because they were originally settled by Anglo-Saxon settlers, brought with them their mycophobic attitude. Few mushrooms are used and picked by the white populations there. The aboriginal use of fungi is also limited to a few species and do not make up a significant part of their diet.

Edible Mushroom Terms

Ethnomycology: The study of the relationship between people and fungi

Fairy ring: Circular pattern of growth of mushrooms that occurs in some species.

Mycophilic: Love or desire of an individual or people to mushrooms, especially with respect to their edibility.

Mycophobic: Fear or dread of an individual or people to mushrooms.

Questions to Think About

1. What are some misconceptions concerning mushrooms, with respect to their edibility?
2. What generalization did Gordon Wasson make as to why some people will readily eat mushrooms while others will not?
3. How does the religious use of mushrooms by Native North American Indians differ from that of their counter parts in Mesoamerica?
4. Aside from just the desire to consume mushrooms for food, what is another use that many Asian cultures have for mushrooms?
5. How did countries such as Switzerland and Finland ensure the safety of people who bought wild mushrooms for consumption in open-air markets?
6. The stinkhorns were thought of as being evil and even obscene in mycophobic cultures, such as in Victorian England, because of their resemblance to the male sex organ. However, this resemblance was also noted in Asian cultures, as well, but here stinkhorns were thought of in a very positive light. How do these Asian cultures regard the stinkhorns?

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