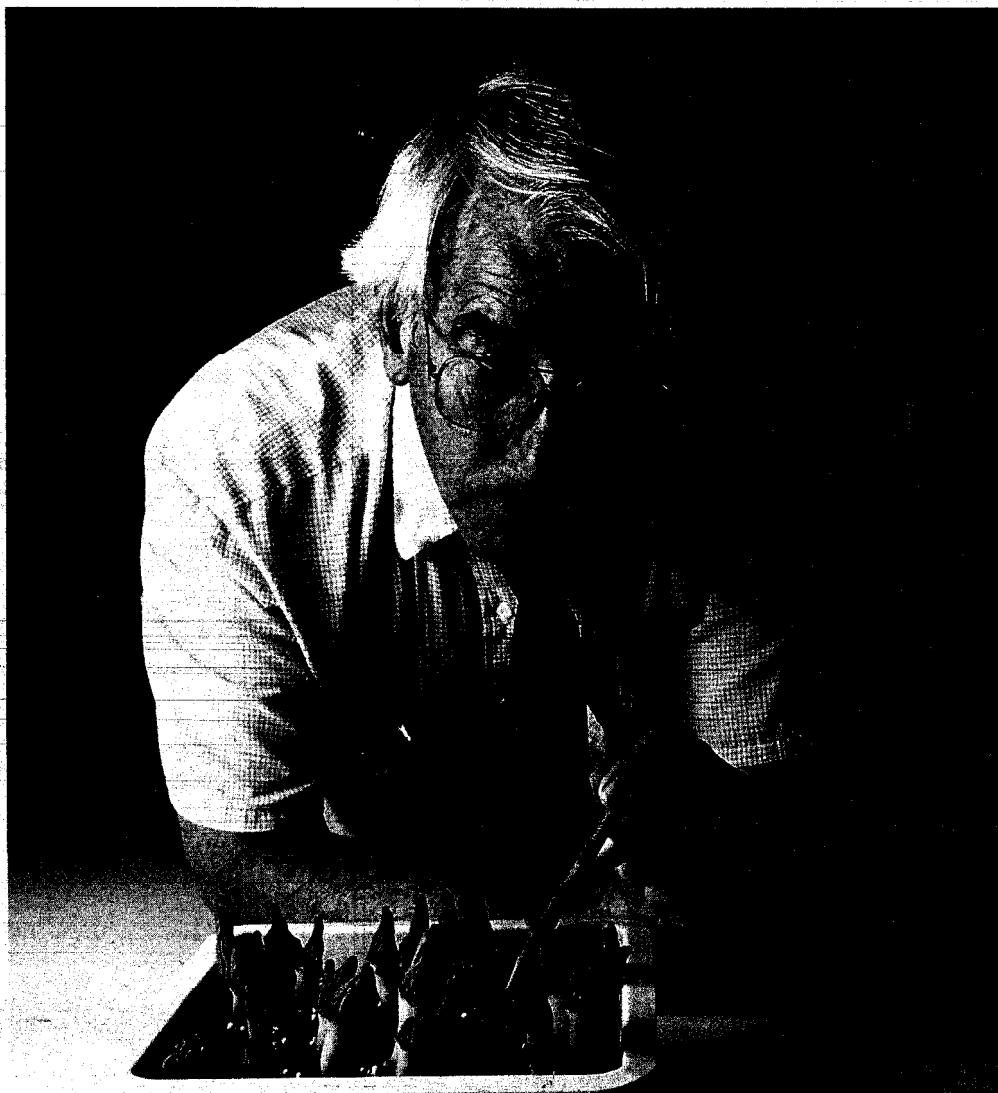


TAMING THE WILD MOREL

Mycologists have coaxed a coveted fungus to come in from the cold.

BY SHAWNA VOGEL



Lab-grown morels, shown by microbiologist Brinton Miller and silhouetted below, taste just like wild ones.

The season has started. In the next few weeks, tens of thousands of adventurers clutching bread sacks will comb through orchards and scour the forest floor, their minds fixed on the banquet that awaits them if only they can bag a few samples of that elusive delicacy, the morel mushroom.

With no nutritional value to speak of, the morel is prized for a taste that its fans describe vaguely as "luxurious," "woody," and "mushroomy but not like any other mushroom." Specialty supermarkets in New York peddle it in dried form for as much as \$12 an ounce in the off-season. And fresh ones, which scientists have only recently learned to cultivate indoors, will soon grace grocery stores year-round, nationwide.

The morel mushroom is unique not only gastronomically but also botanically. Like all mushrooms, the morel is a fleshy fungus that feeds on organic matter. But the morel looks nothing like the common button mushroom seen in supermarkets. The cap resembles a small oval sponge with light ridges around darker pits. It runs smoothly into a sleek, hollow stalk, so there are no unsightly fins on its underside.



Unlike the button, it comes in so many sizes and colors that mycologists still can't decide whether there are four species or dozens.

But for the morel's growing legion of enthusiasts, the anatomy and taxonomy of the coveted morsels is secondary. Far more important is their getting their hands on some. For that they travel to Muscoda, Wisconsin, where roughly 4,000 mushroomers will gather on the third weekend of this month to take part in the seventh annual Morel Festival. Pickers grab prizes for the tallest, heaviest, oddest, and fattest morels, or simply for the biggest cluster. For pickers who come back from the woods with no morels at all, the town also offers pre-picked morels for about \$6 a pound. There are more than a few such empty-handed gatherers. The locals say you have to hunt morels to learn to hunt morels; short of that you must at least get the lowdown from someone who has.

"You can always tell a novice because he'll be heading down the wrong side of the hill," says Peggy Harms, cochairman of this year's morel fest. Experienced gatherers like Harms pick uphill so that the mushrooms are at eye level. They also know that morels spring up on the south slope early in the season since the sun thaws the ground there first. "Later," she says, "they move west, then north, and when they get to the east slope that's the end of them."

The best place to look for morels, most agree, is under a dying peeling elm. But since Dutch elm disease is no longer killing many elms

in this part of the country, the skirt of an apple, butternut, spruce, cedar, poplar, or yellow pine tree will do. However, morels, whose spores are carried by the wind, often show up elsewhere. They pop up in such ignoble spots as piles of dung, bales of hay, stacks of rotting newspaper, and, particularly, burned land. After World War II the devastated European arena produced record crops.

Morel stalkers like Harms are glad to dish out hints



Morels take all shapes and sizes. These prizewinners (from left) were 13.5 inches around, .66 pound, and 12 in a bunch.

about where morels *might* be, but extracting more specific information, like where they are right now, is next to impossible. As Justin Isherwood, a farmer and morelist from Wisconsin, once said, "It is too much to ask of a friend that he would tell the whereabouts of his morel ground. Perhaps it is too much to ask even of a marriage partner."

The inexperienced hunter must simply search for the morel's telltale top. The most common species of morel in this country is *Morchella esculenta*, the yellow morel. Next is the black morel, *M. angusticeps*, which is earlier, smaller, and slightly

more flavorful than the white. All species come in muted shades of black, cream, brown, and gray, scarcely distinguishable from the forest floor.

"You've got to have an eye for it," says Harms. The risk, she explains, is not only that you'll find no morels at all, but worse, that you'll find the wrong kind. "There are plenty of people who don't even go out because they're scared of getting a poisonous one."

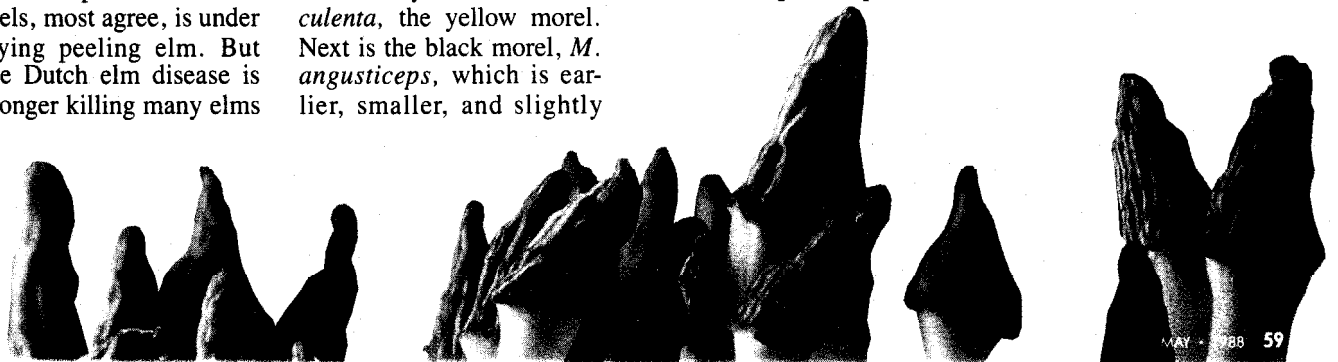
Their fear is not un-

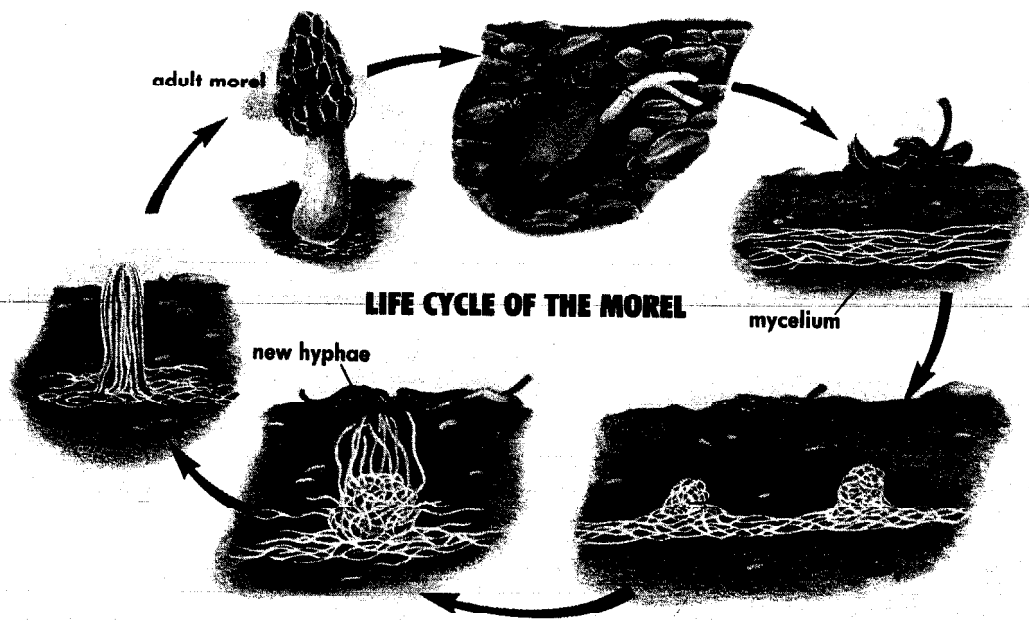


This is the real thing, *Morchella esculenta*, known as the yellow morel, and not to be confused with the poisonous false morel.



Finding morels isn't always a problem. This man was trying to sell his extras at the Muscoda Morel Festival.





Threadlike hyphae that sprout from spores weave an underground network, or mycelium. Hard bundles, called sclerotia, coalesce from the mycelium in autumn and then send out new hyphae in the spring. These form a tiny morel. Then they swell with water until the morel matures.

diarrhea. Severe poisoning can result in loss of coordination, convulsions, coma, and death.

"The symptoms don't always show up, though," says Nancy Weber, a mycologist at the University of Michigan in Ann Arbor. "You can eat a little of the mushroom and not have any trouble. Studies with monkeys have shown that as you increase the dose, you'll have perfectly healthy animals at first, and then you won't find sick monkeys, you'll find dead monkeys. There's a safety zone, but afterward there isn't much leeway. Nobody in their right mind should consider eating false morels."

But precisely because of the safety zone, some people knowingly eat them. "Their parents ate them, and their grandparents ate them, and

they're not going to pay any attention to anyone who tells them they can't," says Weber. The same is true for early morels. These mushrooms—sometimes called caps, because their caps don't connect to the stalks but hang free, like skirts—can cause some of the same symptoms as false morels. Poisonings tend to strike in years when the crop is good. "The temptation is to gorge on them every day for a week," says Weber, "but the body simply can't break down the toxin fast enough."

Given a good guidebook, anyone can steer clear of disaster. But it's not surprising that over the years the danger of poisoning and the frustration of fruitless picking have prompted countless efforts to domesticate the morel.

Scientists at Neogen, an

agricultural biotech company in Lansing, Michigan, finally grasped that golden ring in June 1986 and claimed a landmark patent for morel cultivation. Neogen's coup lay in figuring out how to coax the fungus into its sexual cycle, when the morel itself is formed.

The mushroom is the fruit of the fungus. Its pits house spores that give rise to new growth. The rest of the fungus, acting like roots, is underground. This network of food-gathering fibers, which looks like the fuzzy mold that grows on bread, is called a mycelium. When winter or bad growth conditions lay ahead, mycelium fibers coalesce into a hard bundle, or sclerotium, about the size of a small fist.

"In the spring," says Brinton Miller, vice president of research at Neogen, "the melting snow and the rain serve as a signal to the fungus: 'now's my time to go through my sexual cycle.'"

New threads emerge from the sclerotium, and some grow toward the surface of the soil to form a tuft—the start of the fully formed morel. Researchers at Neogen discovered that by starving the sclerotium and flushing it with water, they could mimic spring and fool the fungus into fruiting on command.

Now morels can be grown indoors 365 days a year. Miller predicts that by early 1989 cultivated morels will enter stores in Switzerland, where Kuhn Champignon, the mushroom company, has just set up a pilot plant. They should be available in this country later that year—several U.S. companies are negotiating with Neogen for a licensing agreement.

But, according to Miller, commercial morels aren't going to flood supermarkets at first. "They'll probably be sold in gourmet stores alongside the shiitake mushroom, which people still consider an exotic food even though it's been domesticated for over fifteen years." And the price of morels will still hover around today's seasonal prices, which range from \$15 to \$30 a pound.

Even if prices dropped and availability rose, most morel lovers, motivated by the thrill of the hunt, would probably still take to the woods. "Once in a while you'll run into a place where it's just morels all over," says Weber. "You fill your basket in half an hour and it's such a heady feeling. You can't decide whether to tell people about it, because then you'd feel utter bound to share them, or to just be a miser and go off and enjoy them all yourself." □

Associate Editor Shawna Vogel wrote about the not-so-extinct *coelacanth* in the March issue.