

Spalted Wood

Rare jewels from death and decay

by Mark Lindquist

There is no official documentation of spalted wood that I have been able to find. Apparently nobody was crazy enough to consider using "rotten" wood in the past, or at least nobody would come out and show that he had used it, and accepted it. I'm sure one important reason it wasn't used was the lack of the kind of abrasives that are available today. Any turning done with spalted wood requires extensive sanding to get past all the pecks and chips that occur from working the brittle wood, even with the sharpest tools. Working with it is like working with torn end grain everywhere, but that's part of the challenge. In the end, the pain is forgotten as the piece comes to life.

Spalting is caused by water and fungus. If you've ever noticed a piece of sheetrock or plywood that accidentally got wet from the water on the floor or ceiling, you'll recall the edge where the water stain stopped, leaving an interesting pattern. The material soaked up the water like a sponge, and the water combined with chemicals in the wood or sheetrock, to leave a stain in a random, arbitrary pattern. Spalting is like this, but far more complex. Combine this staining with the fungus at work breaking the wood down, the mineral content of the soil that the tree grew in, the mineral content of the water trapped in the tree, the temperature and other climatic variables, the softer and harder parts of the wood in the tree, and countless other biological functions, and suddenly there is an incredibly complex system that results in spalting. I can't explain exactly how the process occurs; I can only speculate that the prominent black lines are caused by the accumulation of mineral deposits within the wood that separate the harder and softer areas as well as define the zones that have been attacked by fungus.

There is one thing so far that I have found consistently predictable: the absolute unpredictability and inconsistency of the wood and its structure, the spalting, and the patterns. Each piece is completely different from the next, even six inches down the same tree. That, too, is part of the challenge of the material. One tree may have good workable spalted wood, while the next, although appearing the same, will be useless. So working with the wood requires patience, faith, stamina, and above all, experience. With each piece of spalted wood comes a program of rules and problems that have to be worked out. Only by working the wood can one gain the knowledge, experience and understanding necessary to appreciate and succeed with the material.

Mark Lindquist is a sculptor who earns his living by turning and carving spalted wood and burls. He's 28, married, has two children and lives in Henniker, N. H.



Lindquist amid treasure trove.

Finding spalted wood at just the right point is crucial, because if the wood decays too long it will be really rotten, unworkable, and useless even as firewood. If the wood is found too early, it lacks character and seems bland like conventional wood, which, after one has once seen beautiful spalted wood, is plain to the eye. Spalted wood that is too soft will have very punky spots that are impossible to do anything with, which, in combination with harder spots, will not allow the piece to be turned. Spalted wood that is too hard will most likely check, because it's right in between and is really unstable. One beauty of spalted wood is that in a sense it has been allowed to age. It is no longer green, and needs only to dry out. For some reason, spalted wood caught in the right stage is stable enough to resist checking. I attribute this to the relaxation of tension within the wood that ordinarily causes splitting.

As far as I know, spalting occurs mainly in these woods: all birches, beeches and maples. It occurs in elm, but rarely in red and white oak. Apple spalts, but spalting is relatively unknown in walnut and butternut. Most of the white woods show good spalting. The process occurs at different rates for different trees, and of course depends on climate and environmental variables.

White, yellow and gray birch spalt very quickly after felling. White birch usually starts showing some figure within a year and a half; gray birch and yellow birch take a bit longer, but they spalt quickly nevertheless. Black birch spalts

[Editor's note: According to J. S. Boyce in *Forest Pathology* (McGraw Hill, 1948), "Narrow zone lines, usually black but sometimes dark brown, are a common phenomenon of many decays. They are frequently formed in the white rots, and they are more common in decayed wood of hardwoods than in conifers. At times black zone lines may be fantastic in pattern." Boyce goes on to identify the various fungi, bacteria and parasites responsible for each type of decay, and the characteristics and colors typical of each.

In essence, a fungus first invades the wood (incipient decay), establishes itself, and then breaks it down. The zone lines mark the intermittent progress of each type of fungus as it advances into the wood, or the point where the tiny filaments (mycelia) of two competing fungi clash for possession of the tree's tissues. Generally the wood is softer behind each zone line and harder ahead of it. Says Boyce, by way of example, "In aspen three stages of decay have been recognized. In the incipient stage the wood is faintly colored from light pink to straw-brown; in the intermediate stage it is colored from straw to chocolate-brown, but it is still hard and firm; and in the advanced stage is included all soft, punky wood irrespective of color. Wood in the incipient and intermediate stages is utilized for some purposes but in the advanced stage is always rejected.]



Spalted maple bowl with ladle, 10-in. dia., \$375; spalted yellow birch fruit bowl, 12-in. dia., \$250. Both bowls were made and



priced for museum collections. Maple rosebud vase, right, 2-1/2 x 6 in., about \$50, is by Melvin Lindquist, author's father.

the slowest of all the birches because it is the hardest; however, when it spalts it is very beautiful, and if caught at the right point will work easily and still remain hard. Birches tend to spalt regularly and predictably with the grain because of the straightness of the tree's normal growth.

Beeches also spalt predictably with the grain, but the wood is often unstable and checks easily. Spalting occurs after two years in most cases. Elm spalts rather quickly, also within two years. However, it frequently lacks character and often looks anemic. But if it's found at just the right time, and the wood has good figure in it, some beautiful pieces may result. Apple spalts, but oh boy does it crack! Oak may spalt, but it tends to rot from the outside in. Occasionally, though, oak will provide a splendid, magnificent piece of spalted wood.

But the best of all spalted woods are the maples, especially old New England sugar maples. Old sugar maples contain infinite grain configurations with fantastic and beautiful patterns. The old-time makers of fine furniture and musical instruments coveted the beautifully grained maple wood that someone's grandfather had stored for generations to come. There are names for the recurring grain configurations, although today it's difficult to get such wood, and the cost is unbelievable. There are tiger maple, fiddleback maple, bird's-eye maple, blister maple, curly maple and burly maple, to mention a few. Because of all these various grain patterns and because of the hardness of the wood, old sugar maple trees can contain remarkable patterns, designs, and even pictures of recognizable objects.

Soft maple will spalt in anywhere from two to four years.

Rock maple, or sugar maple, starts to spalt after two to five years, and once the process is working, there is a point at which it quickly speeds up and the tree goes rotten all the way. Just before that is the time to get it. I once found an old sugar maple, full of maple sugar taps, on the side of a dirt road, and I estimated the tree had begun to grow two hundred years ago. It was full of tiger, curly, and blister configurations, all magnificently spalted. The lines were so intricate that it looked as though an ancient Chinese calligrapher had deliberately penned his designs within the wood. The wood itself was still very hard; its texture was sensuously creamy, and the color of the aged wood was rich and golden. I was amazed at the beauty that was hidden within the old rotting hulk of a tree. The farmer must have thought I was crazy to touch it, but he didn't say anything for fear that he might scare me away and the blasted mess would stay there forever. There were maps of the world, animals, birds, fish, mountains, even a detailed "painting" of a rose, all done in fine lines like a pen and ink drawing. The most amazing thing was that the wood between the dark lines changed color from area to area, so that it seemed to be a carefully executed design of the most sophisticated combination of lamination and marquetry.

By far the most exquisite of spalted woods, and in my opinion better than the rarest exotic, is a piece of choice, aged, pictorial-figured, spalted sugar maple. The pictures within such wood seem to be a record of the tree's history: the storms, the sunny days, the cool moonlit nights, the wars that happened during its time, the sunsets, the pain and cold



Block cut from spalted maple log, above, shows fungal zone lines extending throughout the wood, a three-dimensional lattice. Dark area at center is completely decomposed. Downed rock maple tree, left, shows spalted end grain. Mushrooms growing on end of maple log, below, are reliable clue to spalting inside.

of the ever-changing New England weather. There is mystery locked inside, and infinite beauty—a worthless old tree making a last attempt to display its glory.

Think of the availability of the material: the cost is your time. Quality depends upon your perseverance and faith that the right piece is there, free for the taking. The process of working spalted wood begins with finding the material—in essence, found art. Finding spalted wood is very simple once you know what to look for. All I do is go out in the woods and look for fallen or dead standing trees. Maples are the best, because they take longer to spalt. Birches are often disappointing because the bark almost always looks intact, but the inside of the tree may be rotten to the point of mush. But no matter what you look for, you'll never know what's inside the log until you cut it. A lot of it is guesswork, a lot is based on experience and keys or signs to look for. The best source for exceptional spalted wood is the dead, fallen tree that has been lying around and looks as if it's not worth the powder to blow it to oblivion. Check the soil that the tree is resting on. If it is rich dark earth, or mossy, or covered with rotting leaves, that's a good sign. If the end or side of the log is covered with mushrooms it is a good bet that spalting will lie within. Many times you can see spalting on outer layers of the wood, where the bark has come off the tree. After a while you acquire X-ray vision and can guess what is going on inside the log. But there is no substitute for cutting into the wood to find out what's there. Most of the time, it's a surprise.

Normally I approach the end of the log that has been exposed to the weather, and cautiously crosscut off about three inches of the end. This usually takes out the end checks and the "mock spalting" that often occurs on the surface. Having exposed the face of the log at that point, I usually make a second cut about 16 inches down the log because I work with relatively small sections that are easy to carry out of the woods, and happen to be the length of the bar on my lightweight saw. If the figure or picture is good, I rip six-inch thick sections working around the center, cutting through any

faults, cracks or spots that might check later. Stay away from the center or pith because it's a sure thing that it will check. The other possibility at this point is to take the log or butt to a mill (they may not saw it, fearing metal or doubting its worth) and have it cut into boards. It's difficult to work it this way because you never know what you'll run into.

Cutting spalted wood is theoretically similar to cutting gems and lapidary work. As in cutting picture jasper, the object is to get the greatest possible amount of picture from the piece at hand. The wood must be carefully studied and observed before cutting, to ensure the best picture within the chunk, relative to the bowl being turned. So this introduces the sculptural theory of the object being contained within the mass, which it is the artisan's function to release.

Spalting has characteristics too numerous to list, but among them are some that govern cutting methods to produce the best figures. The end grain of a log gives a clue to what is inside. The picture will often be very beautiful and full, if the log is well spalted, and it can be worked, providing the entire crosscut disc is not used (because it will definitely crack). So the best use of spalted wood, allowing the most control, is side grain or ripped stock. The lines forming the picture in the end grain will normally travel parallel, lengthwise with the log. So if the figure is double-lined, making swirly star-shaped patterns in the end grain, the log may be crosscut several times, like slicing ham. That same picture will occur several times, with slight variations, for a considerable distance until the pattern shifts because of a limb or irregular growth. The lines that make end-grain patterns also make side-grain patterns. Birches, which spalt more regularly, have fairly straight, predictable lines, sometimes close together, traveling the entire length of the log. The side-grain figure will resemble zebrawood, but the color will be far brighter. The end-grain picture will be a network of fine black lines.

If a good spalted log is found at just the right point, the markings may be consistent and predictable throughout, and thus easy to cut, because the broken-down, partially rotten wood is very soft and cuts nicely. Deciding where to cut is the real problem. You must learn to see the wood, the finished

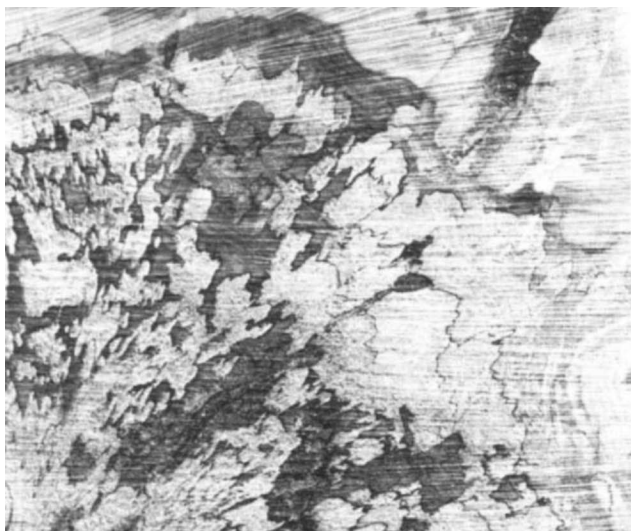
object, in your mind's eye, and then balance that against your observations of the log, its faults and patterns. In essence, you must flow and harmonize with the wood and the wonder of the graphics and design within. A wrong move will spoil the picture; the right move will unfold unbelievable beauty.

Here is an opportunity to cut the wood with the same care that later will make the object. The tree was carefully grown, and your object must be carefully made simply because of the nature of the material. So the harvesting or gathering of the wood must be equally special. It really is like a crop. The tree dies and begins to decay; when it spalts just right, harvest.

After the wood is cut, I usually paint the ends of my chunks with an inexpensive white glue and water solution, applied liberally, to keep the ends from drying too quickly. I use epoxy to seal the very best pieces, because they come only once in a lifetime. I see them as uncut diamonds, so the expense is worth it. After sealing I stack the wood in an open-air shed, making sure to sticker between the pieces for air circulation. I leave the blocks in the shed for a year, and then bring them into an indoor shed. The indoor shed is closed with less air circulation, but it freezes in the winter and heats up during the summer. I do not sticker the blocks indoors, but merely pile them on top of each other. After a few years, they are dry enough to turn. The thinner the block the quicker the drying. The usual green bowl methods (*Fine Woodworking*, Summer '76) may be used, but the risk of splitting may be large, depending upon the piece. I'm three years ahead of myself on wood, so I let it age and mellow by itself. A climate-controlled room would be effective, I'm sure, but nature will do the job given the chance.

Spalted wood has always been around; it might be right in your own back yard. Recognizing the potential, and the limitations of the material, anyone can have free access to wood so rich and alive with color and character that it transcends the nature of the wood it was before its metamorphosis. Realize the wood has made a transition, a long journey from one life to another, and catch it, discover it, at just the right moment. Your woodworking will enter a new phase unlike any other you've experienced.

Fresh-cut end of spalted maple log shows advanced decay and highest degree of spalting in rainbow colors, a rare find. Covered jar



made of spalted tiger maple, 6-in. dia., is production work to retail in the \$50 to \$100 range in craft galleries.

