

The Demise of American Chestnut

Tragic loss of a great American timber

by Jon Arno

At the conclusion of one of my recent wood-identification seminars, a shy and obviously puzzled young man came up to me with a 2-ft.-long 1x6 of grayish buff-brown wood. Before approaching me, he had fumbled through my set of samples on the table by the podium in search of a match that would save him from asking the inevitable question, "Do you know what kind of wood this is?"

Because the sample was so beautifully clean and clear, determining its identity stumped me for a minute. But one peek at the endgrain through the hand lens revealed the familiar flame-shaped pore pattern of American chestnut, *Castanea dentata* (see the two photos of the samples on p. 72). Chestnut was once a major American timber but millions of acres of the trees were destroyed by a blight early in the 20th century. Although my sample set contained American chestnut, there was little mystery as to why this fellow was unable to make the match. My only sample was a remnant of an old barn beam—wormy and streaked with black from the reaction between tannin and steel cut nails—but it was a treasure to me just the same.

As the young man's shyness subsided, I learned that this magnificent piece of chestnut came from his grandfather's shop. And since his grandfather had passed away recently, he wasn't willing to part with this board; its value to him went well beyond the rosewood, walnut and money I was prepared to offer in exchange. Later, it occurred to me just how brief each generation's collective experience is. Only a few decades ago, any schoolboy would have recognized chestnut at a glance. It seemed to be everywhere: the split rail fence he climbed on the way home, the spice rack on his mother's kitchen wall, even the chest of drawers from which he plucked his socks in the morning. And now it is gone; it's almost as if it had never been.

The tragedy of the blight

First reports of the chestnut blight came from the New York Botanical Gardens in 1904. The lethal Asian fungus (*Endothia parasitica*) that caused it probably was introduced on nursery stock brought to North America from the Orient sometime in the late 1800s. Radiating out from New York at a pace of about 20 miles per year, this unstoppable scourge had decimated the entire native range of American chestnut from New England to Georgia and west to eastern Missouri by the late 1940s.

Because the fungus does not destroy the root system, the term *extinction* cannot yet be applied. Chestnut still exists throughout its native range as sporadic thickets of sprouts coming off of ancient stumps. These sprouts may attain diameters of 2 in. to 4 in. and heights of 20 ft. Some may even bear fruit before they too succumb to the blight, but as a North American timber species, the

status of chestnut has now been reduced to that of a shrub. To be sure, there are isolated specimens (see the photo at right on the facing page) that are of great interest to botanists seeking specimens that may have natural resistance. Reports of a healthy tree discovered in Oakland County, Michigan, made it into a suburban Detroit paper not long ago. Also, small woodlots planted by early settlers outside of chestnut's native range can be found that contain healthy specimens spared by their isolation. And there is a small grove in western Wisconsin as well as other occasional plantings all the way to the Pacific.

The demise of any species, fauna or flora, weakens the fabric of life on earth, but the loss of American chestnut represents a tragedy of epic proportions. Prior to the blight, chestnut may have been the single most important species in America's Eastern mixed-hardwood forest. Although not the largest of our native trees, in the forest it had attained heights of more than 100 ft. and diameters in excess of 6 ft. and often yielded clear logs up to 50 ft. or longer. The nuts (see the photo at left on the facing page), technically a seed, were as sweet as the European species (*C. sativa*) and plentiful, coming by the bushels from every tree in multiples of two or more to the burr. The annual food production per acre from mature stands of chestnut rivaled (in some cases surpassed) that of cereal crops such as wheat or even corn. "Chestnuts roasting on an open fire" were traditional holiday treats, and the nuts were also an important ingredient in stuffing. The remainder of the crop served as fodder for livestock or as a mainstay in the diet of native wildlife, thus ultimately coming to our table as meat from the butcher's shop or the hunter's bag.

But what about the timber?

As plentiful as chestnut was, it was never a prized cabinetwood of the caliber of walnut or mahogany. It was too common, too utilitarian and, frankly, it was lacking in some important functional properties. For instance, with an average specific gravity of only 0.40 (oven dry weight/green volume) which is identical to that of yellow poplar (*Liriodendron tulipifera*), chestnut was much too soft to serve as the primary wood in truly rugged and durable furniture. Its ring-porous, open-grain surface (shown on this page in the background) presented some finishing problems, and its propensity to split, while a benefit to the shingle maker, made it risky to use for wide panels or structural members bearing weight across the grain.

Chestnut never was a pretentious choice for glamorous woodworking. It was a plebeian wood, a cheap and plentiful performer of common tasks. Its outstanding weathering properties made it an ideal telephone pole, a somewhat spongy but long lasting railroad tie and an exceptionally durable coffin. It was also used extensively



Chestnut trees once covered nine million acres of America The nuts (above) were a major cash crop in Appalachia, and the timber was used for everything from telephone poles to furniture. But around 1900, a fungus spread across the country and within 50 years had destroyed this resource. A few groves, like the one at right in Trumpelo County, Wisconsin, survived because of their isolation.

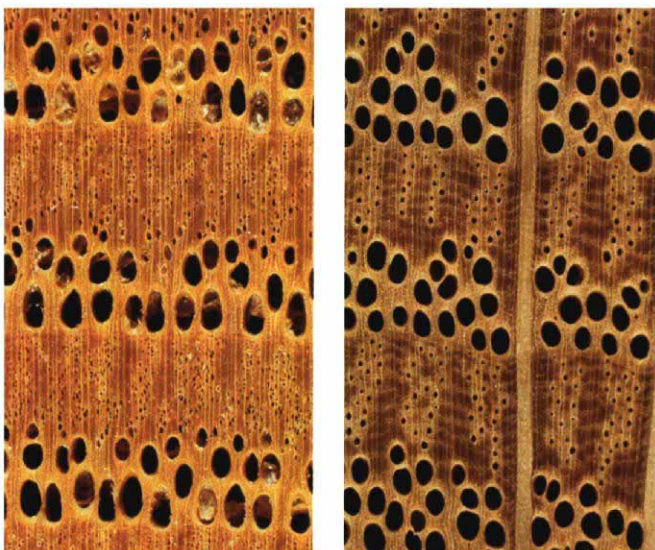


for sash and trim, siding, beams and doors. Chestnut was also a popular choice for the substratum of veneers. With an average volumetric shrinkage of only 11.6% (green to oven dry), it was quite stable relative to other woods used for that purpose such as red gum (*Liquidambar styraciflua*, 15.8%) and even yellow poplar (12.7%). Given its stability, its soft, easy working characteristics and the fact that it was plentiful in the Connecticut river valley and southward through most of the original Colonies, it was commonly used as a secondary wood by some well-known Early American cabinetmakers. For example, chestnut can be found hidden away as the drawer sides and interior parts of some of the finest 18th-century work of the Newport, R.I., masters John Townsend and John Goddard.

As secondary woods go, chestnut has a lot of charm, and its absence leaves a gaping hole in our line-up of domestic species. A secondary wood can be bland, but chestnut isn't. Its ring-porous nature gives it a pleasant figure on the tangential surface, and its mellow light-brown color darkens just enough under a clear coat of varnish to produce a warm, attractive hue without the use of stain. In addition, a great deal of chestnut found its way into small,

functional articles that seem to have a knack for surviving, such as sewing boxes, knife trays, spice chests and clock cases. It is not difficult to find items made in part or completely out of chestnut; however, because the wood has a faint resemblance to oak, examples of it are sometimes mislabeled in antique stores. To identify chestnut in existing pieces, look for an unfinished surface to see if the wood has a natural grayish, buff-brown color. Then, if it also has an oak-like figure, but is surprisingly lightweight for oak and seems to lack oak's dominant ray flecks, there is a good chance it is chestnut.

For today's woodworkers, acquiring chestnut is, of course, a problem. If you watch the classified ads and browse sawmills, a trickle of chestnut can be found. Because of its great weathering properties, standing deadwood remained sound enough to harvest for many years after the blight. Also, lumber resawn from the beams of demolished barns and buildings finds its way into today's market as expensive, wormy-chestnut paneling, but this is an unreliable and finite source. Of the dozen or so species of chestnut worldwide, the European species, *C. sativa*, is most similar to the American variety, both in terms of the flavor of the nut and the



How to tell chestnut from oak: Chestnut, as shown in the background on p. 70, has a buff-brown color with an open-grain figure similar to oak, with which it is often confused. However, chestnut is substantially lighter and softer than oak, and oak's rays are clearly visible on all surfaces while chestnut's rays are difficult to see without magnification. For final verification, examine a smoothly cut section of endgrain with a 10-power hand lens. As shown in the photos of chestnut (left) and oak (right) above, the larger pores in both woods are concentrated along the outside of the annual rings. But chestnut's larger pores tend to form wavy bands with flame-like bursts radiating away from the annual ring (see the photo at left).

stature of the tree. Because of these similarities, I think the insights provided by the European craftsman, Rudi Wolf (see the sidebar at right), are of special interest because they present a hands-on account of a woodworker who still has a plentiful supply of chestnut. Sadly, the blight was introduced into Italy sometime in the 1930s and apparently the European species is not significantly more resistant than ours was.

Some hope for the future

I would like to conclude this eulogy to the American chestnut by saying that it has been so much a part of the American scene that it will be forever fondly remembered. But I can't. As evidenced by the shy young man at my seminar, few generations will pass before it is as forgotten as the flavor of mammoth meat. But there may be hope. Like strains of flu in human populations, plant diseases are known to lose their virulence. Recently, scientists have isolated a less-lethal (hypovirulent) strain of the fungus that can be injected into a tree, like a vaccine, to protect an individual specimen, but it's not a workable solution for large numbers of trees. Also, there are Asiatic species with exceptional resistance such as Chinese chestnut, *C. molissima*, and plant breeders are hard at work searching for hybrids that capture this feature without carrying that species' genes for small stature and poor timber form. Perhaps a hybrid will be found, a chestnut that is almost as good as the one we will, by that time, have forgotten. For woodworkers today, however, it is only through the shared experiences of Old-World craftsmen like Rudi Wolf that we can "savor the flavor of mammoth meat." □

Jon Arno is a wood technologist and consultant in Schaumburg, Ill. For more information on breeding and other research projects aimed at re-establishing the American chestnut, contact The American Chestnut Foundation, 401 Brooks Hall, PO Box 6057, West Virginia University, Morgantown, W. Va. 26506-6057.

Chestnut: A European perspective

by Rudi Wolf

Fifteen years ago, I settled in the south of France, in a mountainous area called the Cevennes, which is part of the Massif Central. Coming from Holland, a flat land beneath sea level, it was quite a change for me. I had prepared for my new life by studying to be a woodworker for six months at a state school for jobless adults. When I arrived in this mountain village, I introduced myself as a carpenter, although I still had much to learn about the trade.

One of the first things I learned was that working for local people meant working with the local wood—chestnut. Chestnut (*Castanea sativa*), shown in the top photo on the facing page, has been one of the most important cultivated trees in the south of France and in the whole Mediterranean area for thousands of years. It seems that a century ago there were more than 300 varieties adapted to all types of geographic and climatic situations. The trees produced nuts that could be used fresh, dried or for cooking; for making a kind of marmelade; to fatten up pigs or to feed to goats to increase their milk production. And then there was the wood.

Chestnut it should be: People in this region grew up with chestnut and would not accept a door or window made of oak. Even when I tell them that I have fine oak planks in stock, which were cut 12 years ago and are well seasoned, their inevitable reply is "Chestnut it should be." Chestnut is used for anything and everything: construction timbers, beams and roof planks, floors, doors, windows, shutters, tables, cupboards, matted chairs, bee-hives and barrels. The wood is also used to dam the river to provide a summertime water reserve in case of fire, and even the young shoots are split into thin strips and used for weaving baskets.

Unfortunately, in recent times many trees have died from the same blight that destroyed the chestnuts in America, and so the chestnut's economic importance has declined. But the blight has not been as bad here, and healthy trees are still plentiful. My 90-year-old neighbor, a farmer, can still distinguish about 20 to 30 varieties of chestnut on the basis of subtle differences in the nuts.

In spite of how commonly used chestnut wood is, I couldn't find it at the commercial lumber firms in town. I had to go inland to the smaller local sawmills where the newcomer, as I once was, tends to get the worst wood. It took me years to learn to recognize the wood's subtle characteristics. Healthy chestnut is whitish yellow and quite solid. Lower grades tend to be brownish in color and somewhat softer. Common defects are, of course, rot and wormholes and a kind of yellow discoloring caused by mildew. But worse yet is the "roulé" or "roulure," which is when the annual rings separate (not to be confused with heart split or dry split). In severe cases, a plank becomes like a bundle of matchsticks, and it is not uncommon to scrap 30% of each board by sawing out the roulé. When the wood is freshly sawn, it is sometimes difficult to see the defects, but I eventually learned to look carefully when buying my wood.

This roulé problem is undoubtedly the reason why modern industrial woodworkers won't touch the stuff—it's just too much trouble. But for the older people in this region, chestnut is an integral part of the traditional way of doing things. They are very proud of the knowledge that's been handed down from father to son about how to use chestnut because, after all, it's their tree, their wood.

Working in the old ways: Some years ago I told my elderly neighbor that I wanted to buy a ladder. He sounded a bit angry when he said, "Don't throw your money away!" He told me that I should wait until winter, go to the north slope of the mountain and cut a pole of chestnut from a 12-to 15-year-old tree. Next, he said to saw the pole lengthwise, make mortises in both pieces and insert dry, split rungs of knot-free chestnut. He assured me that when the green wood dried and shrunk, the rungs would be secure. To prove this, he showed me some ladders that he had made more than 20 years ago. In spite of the fact that they were always left outside in the wind and rain, they were still perfect.

Last year a farmer commissioned me to make a "pasteire," which is a large slope-sided box or trough used to kill and butcher pigs. Upside down, the box makes a table on which the pig is secured and bled. Then the box is turned over and used as a kind of shallow bathtub as hot water is poured on the dead beast so that the hairs can be rubbed off the skin. I couldn't find the high-quality chestnut planks needed for the job, and so I proposed another type of wood. But no, he was willing to wait a year for chestnut.

Restoration work on local houses and furniture has also taught me much about how chestnut was used and how to work with it. When restoring the doors and paneling in the old houses around here, I usually discover beautiful, old chestnut after removing several coats of thick, brown paint. The doors and shutters in the center photo at right are copies of the doors that originally graced this old shop front. When restoring old woodwork or furniture, it is sometimes necessary to darken new chestnut to match the old wood. An untreated plank of chestnut will turn a soft brown after a few years, but I've found that by putting the wood in my goat's stable, the coloring process is speeded up. This is probably caused by the dung's ammonia vapors reacting with the tannin in the chestnut.

One year I made several little stools with fancy carved tops like the one in the bottom photo at right, which I had planned to sell to the tourists. Chestnut is similar to oak, only a little more brittle, and although you can't cut fine details when turning or carving, shallow bas-relief is possible. Unfortunately, tourists didn't buy the stools because there were cheaper, mass-produced stools on the market. However, to my amazement, the usually frugal local farmers came looking. Turning the stools around in their hands, they commented on the quality: "Strong construction, and you used grafted chestnut on the top. Easier to carve, isn't it?" For them, the price was no problem. They know about good construction because they use their own hands to make most of life's necessities.

Slowly, the importance of the chestnut forest is diminishing. The blight plays a role, the people's changing lifestyle another. Now they are planting Japanese varieties that are not affected by the blight, but these new, heartier varieties just aren't the same. As an integral part of the culture, the chestnut is disappearing from the scene here as it did in America. □

Rudi Wolf is a woodworker in southern France.



Large, healthy chestnut trees, like this one on the plateau of the Larzac in France, are still plentiful in Europe. However, the same blight that destroyed the American chestnut is slowly spreading through Europe.

Chestnut has long been the wood of choice for doors, windows and interior paneling in the mountain villages of Cevennes, France. The chestnut doors and shutters on this old shop front are copies of the originals. The old window frame above the doors is made of wild cherry.



Wolf made chestnut stools with bas-relief designs, like the one shown here, to sell to tourists. As it turned out, the tourists preferred the cheaper, mass-produced souvenirs, but the locals appreciated the quality and bought Wolf's stools.