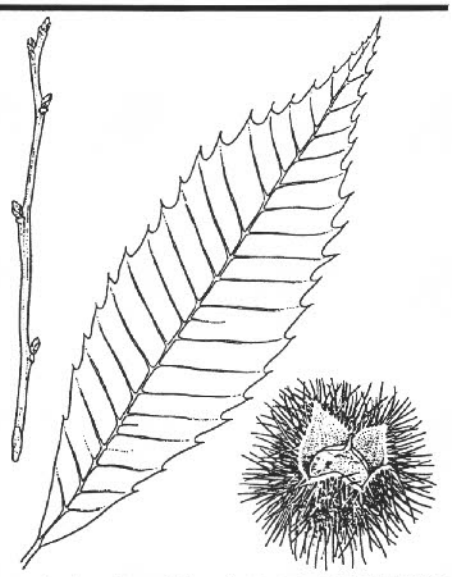
An American Tragedy

By Monroe S. Miller

What any one of us may be today, as well as the things that interest us, can usually be traced to people in our past. In youthful years, we are much of what fathers and grandfathers or older brothers and favorite uncles were. Special high school teachers leave great marks on many, I suspect. They sure did on me. Our early working years are influenced by the person who is our boss at any given job - I have a good bit of Peter Miller and Jerry O'Donnell in me. And as we study and struggle through the college experience, university professors have the opportunity - some say "responsibility" - to positively influence young and maturing people. I was particularly fortunate, while a student at our great State University in Madison, to attend classes taught by a number of influential men. I'm a better person for the impact they had on me, not just because of facts and figures and theories given by them, but rather for the lessons in rational and expansive thinking. They were able to open my mind to greater appreciation of many things in life. I am thoroughly convinced that those things are more important than the details of a particular course; they made many like me more cosmopolitan than we ever imagined possible. Men like Jim Love, Frances Hole, Dick Corey, Bob Newman and John Walters did all of those things for me. So did Ed Hasselkus.

I'll forever be grateful to Dr. Hasselkus for my personal interest, awe and near reverence for trees. He taught (and still does, along with other courses) a two semester class in woody landscape ornamentals. I've practiced much of what I learned from him for fifteen years on my golf course. Any Golf Superintendent must necessarily be aware of, if not really interested in, trees. They are significant features of most golf courses and critical hazards on many. My interest goes deeper than that, however. Broad topics like forest succession and climax vegetation, tree ecology and species identification are interesting to



read about and to observe. Phenology is another happening I learned to appreciate and enjoy from Ed. Bruce Allison's writing and the work he does have intrigued me for some time. Because of an interest that is more than casual, I have tried, over the years, to diversify the collection of trees we have on our golf course. I've had to do some searching and suffer some failures, but we've planted Kentucky Coffee trees, Shagbark Hickory, White Oak, Burr Oak, new Elm varieties, English Oak and Chestnut Oak, to name a few. That's Chestnut Oak by the way, not Chestnut. But I **do** have a pair of chestnut trees on our golf course, a claim few anywhere in the country can make.

The history of the American chestnut (Castanea dentata) is a tragic one. Although it is a tragedy that happened some 75 years ago, it is one our generation can relate to because of our very personal experience with the Dutch elm disease. The chestnut was a tree that had everything. Located from New England down through the mid-Atlantic states and west almost to the Mississippi, the chestnut was probably the most important tree in those forests, economically as well as aesthetically. Someone estimated that one tree in four in the Appalachian mountain region was a chestnut. The tree grew with a long and straight trunk that was nearly free of knots and other defects. It made excellent lumber. And of course everyone has heard how tasty the nuts were. It was a common sight in the fall to see the burrs open and drop the nuts. They were an important food source for some rural people, for wildlife throughout the region, and they had important economic value when harvested for sale.

The economic value of the trees went beyond all of these things. The wood and bark of the chestnut were excellent sources of tannin, a material critical to the leather tanning industry. A spinoff of the tannin use of the chestnut was the pulp industry. Once wood chips were boiled to remove the tannic acid they were converted to pulp and used in paper and cardboard manufacturing.

And they were beautiful trees. Majestic and graceful in form, they were a favorite street tree, and no doubt found their way to many, many golf courses. Chestnuts did well on a variety of soils and grew quickly, providing shade in a relatively few number of years. It was my New England "friend", Henry Wadsworth Longfellow, who obviously knew the chestnut well and liked it enough to pen the line, "Under the spreading chestnut tree. . . "

This tree, which was the basis for so many industries in those parts of America where it grew abundantly, had another advantage, one at least as important as its rapid growth rates, site adaptation, prolific reproduction or the eager markets for its products. Chestnuts had neither insect nor fungus enemies. It seemed too good to be true to the turn-of-the-century industrialists plotting strategy for cashing in on the chestnut.

Then, in 1904, disaster struck. A forester found that something was wrong with several of the chestnut trees in the New York City Botanical Gardens. Cankers formed on limbs and trunks, spread and finally encircled the stem, killing those tree parts above the point of infection. The disease that caused chestnut blight - *Endothia parasitica* - is believed to have entered the United States in a shipment of nursery stock through a port in New York. It came from stock imported from either Japan or China.

The disease spread quickly and within 40 years it had effectively killed nearly all chestnut trees in the country, some 3.5 billion of them. No comparable devastation of a plant species ever happened before or after, to my knowledge. Not even the American

Elm suffered so terribly. One reason for so complete and fast a kill of the population is the fact that the blight fungus produces two types of spores: one is a dry and large wind-blown disc; the other is a very small and sticky spore that is basically dispersed by rain. It was the small spores that were the real culprits in spreading the disease into every nook and cranny of the country. Not only did the rain disperse them, they stuck to the feet of birds. They stuck by the thousands - almost 7,000 spores were counted on one downy woodpecker. The movement and migration of birds doomed the chestnut trees.

Our country was slow in getting prepared to fight the disease. Discovered, as mentioned, in 1904, it took until 1911 before any special monies were appropriated to study the disease. By then it had become a disease that had reached totally unmanageable proportions. Just to show how desperate foresters were, they developed plans to cut mile-wide swaths across Pennsylvania and North Carolina to prevent the westward and southward movement of the disease. All chestnuts in these zones were to be removed. But before these plans were even close to final implementation, before the quarantine could be put in place, birds had carried spores well past the zones. Plans were cancelled. All hope seemed lost.

It will hurt you to read this: the disease that devastated the chestnut could have been exterminated in 1904, had the knowledge of today been available. And the cost would have been insignificant. But it has been that way with many human diseases, and knowledge itself takes time to accumulate. There is no use or sense in crying over spilled milk. What matters today are efforts to again establish the American chestnut, an effort similar to, if not as well organized or intense, as the project of the Elm Research Institute on behalf of the American elm. The most vigorous program I've read about is at Virginia Tech in Blacksburg, Virginia.

VPI has a chestnut orchard. It was planted in 1976 by Gary Griffin, a VPI plant pathologist, John Elkins, an organic chemist at Concord College, and Al Dietz, a retired industrial organic chemist. The seedlings first planted in the orchard were ones Dietz grew from the second generation of nuts he had exposed to ionizing radiation. The hope was that the exposure would induce a mutation that would be resistant to the blight disease. The original plantation had 200 seedlings, and ten years later ⅔ of them are still alive. They range from ten feet to thirty feet in height. Many of the survivors indeed have had the disease, which isn't surprising since the blight can attack trees at a young age. The goal is to harvest some chestnuts before the blight takes the tree out. Last year the orchard harvest of chestnuts yielded more than 1,300 from trees with no symptoms of the blight. The hope is that one of them has the correct gene combination to resist the disease.

Others are working on the problem, as well. They are dealing with cross-breeding projects. Some are searching wooded areas for that one, single tree that might be prospering, despite the fact that E. parasitica spores are abundant. There is hope that a specimen will be found that, at worse, will suffer only minor damage from blight infection, much like it's ancestors in China and Japan must have.

I've had a real curiosity about the chestnut. There are some historic places in Virginia Cheryl and I want to visit and I have every intention of seeing the VPI chestnut orchard someday. For five years Dr. Jack Berbee was my next door neighbor and, as a forest pathologist at the UW, he had spotted a couple of isolated chestnut trees in Wisconsin's forests. The nearest one was near a ranger station at Wisconsin Dells. I even found that one of our members has one in his yard. It needs more study - last fall (the first time I had checked) the spiny burrs were empty of any nuts. Is it a sterile tree? Or was it merely a case of an unfertilized female tree? What I do know is that it shows no sign of blight. And then there are the two American chestnuts I have on my golf course. This spring was their fifth from seed. A friend gave me the one year old seedlings that were sprouted in Madison. The nuts were from a parent tree growing near Mondovi. At the early stage of their lives I am happy to report they have survived hungry rabbits and reckless cross-country skiers, as well as vicious vandals and errant golf carts. My employees know the price of cutting one of them with a mower would be a fate worse than death. And so far, there is no blight. What a treat to watch these trees grow. Who knows, just maybe one of them will be the tree that restores the American chestnut to the stature it enjoyed seventy-five years ago.

I know that would make Ed Hasselkus as happy as it would make me. We both love trees.

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