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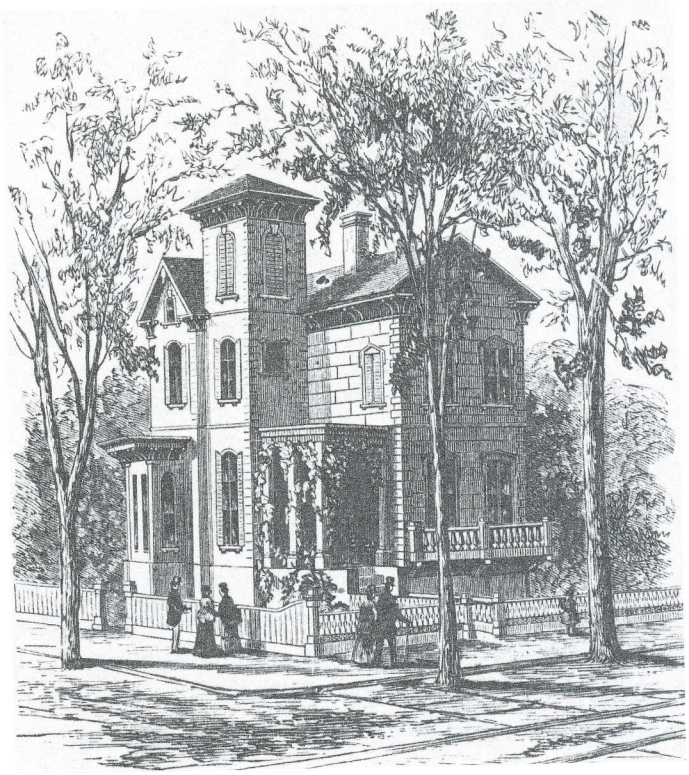
BOULEVARD OF BROKEN TREES

The streetscape of antebellum New England was an ideal environment for the growth of trees—particularly elms. In the absence of storm-water drainage systems and impervious pavement, water was plentiful. Oxygen and nutrients could pass easily to the roots, which were unmolested by excavation; sewer mains, gas pipes, and electrical conduits were still years away. Streetcar catenary was yet to appear, and there were no electrical power lines or telephone wires to make way for. Traffic was light, and there was little demand to widen thoroughfares. Vehicles were drawn by horses and oxen, and while street elms occasionally suffered the predations of these animals, in exchange they provided a steady supply of fertilizer.

Streetscape Modernization

But beginning in the 1860s, a series of modernizations transformed the semi-rural New England streetscape into an intensively managed corridor accommodating a variety of transit and urban services. In many instances, these changes required the outright removal of trees. The spirit of improvement, once the champion of elm planting, now often spelled the doom of the very trees planted by New England's pioneer environmentalists. More than anything, it was the widening of streets to accommodate increasing traffic that brought about the downfall of countless Yankee elms. The trees were, in the eyes of the municipal engineer, little more than traffic obstructions.

Outrage over the felling of town elms to expedite traffic erupted early. In 1864, the *Hampshire Gazette* published a lengthy tract protesting "a few of the devastations made by this monster, 'Improvement.'" Its writer descried the "defacing and despoiling" of Northampton, Massachusetts, "under the guise of straightening



Street elms in Portland, Maine, c. 1880 (Edward H. Elwell, Portland and Vicinity, *1881)*

a street, and widening a thoroughfare," and took special aim at "those who would make haste to cut down the old elms" (trees that "once fully compensated for any shortcomings of brick and mortar"). In one instance, thirteen elms were destroyed "in order to have a straight street and a corner perfectly at right angles." The essay is a remarkably modern appeal for environmental stewardship: "We who live to-day must not forget that we are only life tenants, and we have no right to cut down the wood and despoil the estate; the generations who come after us have a vested interest in these century-old forest trees, the legacies of our thoughtful ancestors. Can we not, at least, by a little pains, harmonize our own need for increased business facilities, with the preservation of these priceless ornaments of our town?"[1]

Other, more subtle changes steadily altered the ecology of the street—making life increasingly difficult for its trees. Water mains were built or expanded and sewer mains installed. Both frequently required the regrading of streets, a process that often smothered the roots of adjacent trees or required outright removal.

Gas illumination technology was perfected in the 1850s, and during the following decade many New England towns placed mains in their streets. Competing gas companies would often each install their own mains, causing repeated excavation of the street.[2] This almost always resulted in severe damage to the root systems of adjacent elms, and commonly killed them outright. Leaking gas was also blamed for poisoning roots and hastening the decline of many a Yankee curbside elm.

With the electrification of the horsecar lines in the 1890s, catenary was installed along hundreds of New England thoroughfares. In many cases, flanking elms were tall enough to allow the wires to pass unimpeded; elsewhere, trees had to be removed or pruned dramatically to make way for the new infrastructure. Streetcar companies naturally had little love for the ponderous trees, for their wires were under a constant threat of being snapped by falling limbs. The trees, however, bore the brunt of this meeting of technology and urban nature. Tree trunks and limbs were often burned where they made contact with the wires, and sometimes entire trees were electrocuted (particularly during periods of extreme wetness). The plant essentially caused a short-circuit in the streetcar system, and it was found that the polarity of the current played a role in the severity of damage to the plant. A 1914 *Scientific American* article described "An Unusual Case of Electrical Injury to Street Trees" in which elms along New Haven's Street Railway Company lines began dying when the company switched the polarity of the overhead wires from positive to negative. The surge of current that once ran harmlessly down the bark was now passing through the living sapwood of the tree.[3]

Urban electrification also brought wires, and so did the arrival of telephone lines in the 1880s. In many communities, the earliest electrical lines were strung from the trunks of street trees themselves, but the living poles were soon replaced by leafless ones. By the end of the century, New England streets had erupted with utility poles and wires. Not everyone cheered the forward march of progress. In 1886, the *Hampshire Gazette* complained about "the recent raid" upon Northampton's Main Street by "electric light companies," whose "unsightly poles" meant the removal of many an elm.[4] Elms and utility companies began competing for space along the street—a struggle that would worsen as the trees aged and the power grid expanded. More affluent municipalities placed much of this wire underground by 1900, but on the typical New England street elm trees and wires became entangled—usually to the detriment of the trees.[5]

As society became more dependent on electricity, the conflict between elm trees and the utility companies grew intense. The trees were accused of causing hundreds of power outages, and very often it was a falling limb that snapped a wire and shut down a portion of the grid—particularly during storms. In the wake of a severe ice storm in 1953, even the tree-loving *Connecticut Woodlands*

admitted that "95 to 98 per cent of storm damage to the electrical distribution system can be laid to falling branches or branches sagging into the lines."[6] The *New York Times* that year ran a story in which a leading Connecticut tree warden claimed that trees, particularly elms, were a threat to the welfare of public utilities. As he put it, most American cities were in urgent need of a pruning. Larger, "weedy" species should be removed at once, he argued, and replaced with smaller trees "of a character that can be trained around the wires."[7] Elms, very big and very weedy, must be sacrificed to appease the goddess of electricity.[8]

Change came from below as well as overhead. Most town and city streets in antebellum New England were unpaved, and often more resembled rural roads than urban thoroughfares. Even as late as 1890, 50 percent of the street mileage in major American cities remained unpaved. Those that had been surfaced were usually paved with brick or granite cobbles or wood blocks, or were simply bedded with gravel. None of these surfaces restricted the passage of water, nutrients, or oxygen to the roots of adjacent trees. Macadam, consisting of alternating layers of crushed stone, was first used in the United States during the turnpike boom of the 1820s, gaining popularity for streets after Frederick Law Olmsted and Calvert Vaux used it in Central Park in 1858. Macadam, too, was highly permeable.[9]

But as the function and purpose of the street began to change in the years following the Civil War, more durable—and less permeable—materials came into use. Cobbles and blocks offered horses a good foothold, but with the arrival of more sophisticated vehicles, smoother pavements were needed. Concrete was used both alone and as a base for asphalt, and the first paved asphalt street in America appeared in 1871, at Newark, New Jersey. Able to withstand heavy traffic and vehicle loads, the material quickly gained in popularity, particularly after manufacturing innovations reduced its cost. By 1925 asphalt and concrete were being used to pave approximately 40 percent of the streets in major American cities.[10]

Asphalt and concrete virtually sealed the surface of the street, depriving trees of water, nutrients, and oxygen. And along with the new paved surfaces came highly engineered drainage systems. These were meant to leave no standing water that could breed mosquitoes and pose other public health threats. But as the new infrastructure whisked away all rainfall, the thirsty roots of nearby elms were further starved. Water that once percolated into the soil and water table below was now moved swiftly off site. Finally, with the arrival of the motor vehicle, a toxic cocktail of pollutants was introduced to the streetscape ecosystem, including exhaust gases, crankcase oil, and fossil fuels.

The new environmental stresses that accompanied streetscape modernization had, by the early twentieth century, begun to weaken New England's curbside elms. The trees faced conditions radically less favorable to growth than those

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Felling of the Cooke Elm in Keene, New Hampshire, to make way for a wider street (Courtesy of the Historical Society of Cheshire County)

during the premodern era. Many older specimens simply perished, and young ones often grew stunted and deformed. The once tenacious and hardy elm was under siege. "The hard conditions of 'congested' urban life are coming upon us," lamented the city fathers of Cambridge.

> Gradually the surface of Cambridge is being encrusted with macadam and bricks; the lawns which separated the buildings from the sidewalks are disappearing in the yawning cellars of modern structures; apartment houses rise above the tree-tops; electric-light wires wither and kill the foliage above, while escaping gases suffocate the roots beneath. In the earth, on the surface, and above, the enemies of shade trees increase at an alarming rate, with the increase of city conditions.
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> . . . The axe of the road builder becomes more terrible than ever the 'woodman's axe,' because directed by official hands; the change in the grades of streets, so often and so mysteriously decreed, is a sentence of death to many a mighty monarch of the ancient Cambridge forest. Ungainly telephone poles are substituted for living trees, and are planted with all the ceremony which city orders and ordinances can command.[11]

Environmental stress also made the elms more susceptible to diseases and insect pests that had posed only minor threats in the past. By the end of the nineteenth century, New England's elms were being increasingly victimized by a variety of pathogens. The elm leaf beetle *(Galeruca xanthomelaena)*, which arrived in the United States in 1834, often stripped elms of all foliage. At New Haven, the first invasion of elm leaf beetles took place in the 1890s, and was met by a city-wide campaign to spray the trees with an insecticide. A second, larger invasion took place in 1908.

Frederick Law Olmsted, Jr., who had been in New Haven that year consulting on its new city plan, was "disturbed to find that the trees on the old Green were being ravaged by elm leaf beetles." This time the beetles had their way with the municipal trees. Although Yale University took quick action to protect its elms against the predator, the city was slower to respond, resulting in the loss of scores of mature elms. Grassroots action, however noble, was often misguided: in one instance, a local newspaper urged citizens to "bring out their teakettles and pour hot water on the pupae" of the beetles at the base of each elm. The effort, which was met with little enthusiasm, was dubbed the Teakettle Brigade.[12]

The increasing susceptibility of the elm to insect pests convinced some skeptics that the tree was no longer worth keeping. An 1890 article in the *New York Tribune*—prophetically titled "The Passing of the Elm"—claimed that the tree was becoming more and more vulnerable and a burden to maintain. ("The elms," the writer concluded in no uncertain terms, "must go.")[13] Subsequent writers also noted the elm's increasing frailty. Clarence M. Weed, writing in a 1913 issue