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Newsletter for the
Clients and Friends of
Hartney Greymont
Tree and Lawn Specialists
An Employee Owned
Company

leaflet

Stone's Throw

New England has many recognizable and beautiful features. Among these are its abundant stone walls separating fields and decorating the landscape. Laid end to end, it is estimated that these walls would encircle the earth 10 times. In his book, Stone by Stone, Robert M. Thorson, professor of geology and geophysics at the University of Connecticut, writes that stone walls are an historical key linking the natural and human history of New England. The story behind New England's stone walls is an interesting one.

In the early 19th century there was a switch from wood to stone fencing; the switch probably had more to do with the availability of stone that a scarcity of wood. Wood and stone it seemed were reciprocal resources. The supply of wood was the highest before the first tree was cut, and the supply of stone was highest when land had been cleared the longest.

Stonewalls—cornerstone of the New England landscape

A common belief is that New England pioneers cleared a rocky wasteland in order to create land suitable for farming. In reality, most of the stone found its way into field walls later as an inadvertent consequence of deforestation. There is also the mistaken impression that stone walls are primarily a Colonial phenomenon. In fact, most were built during the half century after the beginning of the American Revolution.

Millions of stone walls were built between 1775 and 1825. Several important changes in rural society, combined with optimistic self-reliant landowning farmers, were responsible for this rapid pace of wall construction, such as a post war "baby boom" creating surplus labor.

Ultimately, the primary reason for the spread of stone walls during this period was a geological one. Processes within the ground had combined to produce enough stone that could be used to fence the land. The most important link between deforestation and stone walling had to do with changes in the soil caused by the absence of forest litter. The removal of trees and stumps changed the pattern of snow cover and thereby reduced the insulating value of the topsoil. Deforestation inaugurated a sequence of chemical, mechanical, and thermal processes inevitably making the soil stony.

New England's soil developed on a different type of glacial material (called till) than other areas of the country. Till soils here are typically compacted below, rather than above, the surface because of a significant component of silt rather than sand or clay. Soils such as this are especially prone to frost heaving as they freeze early and deeply when exposed to cold winter winds.

Mean annual temperatures during the half century of most active wall building were colder and more variable than those of the present century. Mean annual precipitation in the Northeast was generally lower as well, resulting in drier winters with reduced amounts of insulating snowfall.

Small upward movements caused by frost heaves, although minor (less than 1/4 inch), happen during every freeze-thaw cycle. At the rate of 1/4 inch per winter, frost-heaved stones can

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Tree Statics: Tree Safety

We have all seen pictures or witnessed first hand the devastating effects of extreme weather. The recent hurricanes along the Gulf Coast are good examples. Events like these serve as reminders of our vulnerability to New England's unpredictable weather. In light of our interest in safety and trees, we often consider how trees react to the extremes of weather.

There are two types of tree failures. The first is uprooting or failure from the ground up. The primary cause of the majority of tree failures is a compromised root system. Damage to root systems may be caused by a variety of factors such as humans, mechanized equipment, flooding, disease, or decay organisms. Whatever the cause, the result is a tree left vulnerable to nature's whims.

> *"…time-proven treatments exist which can greatly increase the probability that individual trees will survive the extremes of weather."*

Another type of tree failure is the breaking of individual trunks and large limbs. Leading causes of these failures include poor branch formation or structural flaws such as cracks, wounds and decay.

In New England, ice storms pose a major threat to trees and other landscape plants. Individual trees, those not protected by others in a group, are exposed to greater stress loads and can be severely damaged. Generally, ice damage can occur to limbs 8 inches in diameter or less. Other extreme weather events like hurricanes are often catastrophic and can result in the loss of entire trees. Research has found that individual trees can sustain severe damage when winds exceed 50 miles per hour. Wind speed naturally increases above ground level; therefore, the uppermost parts of a tree canopy are exposed to even higher stress loads during gusts.

Before, this white pine had erratic growth that was vulnerable to the severest elements

While it is not practical to preserve every tree forever, time-proven treatments exist which can greatly increase the probability that individual trees will survive the extremes of weather. Our practice of structural pruning and protecting vulnerable trees is part of a local arboricultural tradition. Dr. Charles Sprague Sargent of the Arnold Arboretum began this tradition based on his travels in Europe and Asia in the early 20th century.

Dr. Sargent passed his knowledge and expertise on to R. Douglas Lowden, who then trained renowned arborists Henry F. Davis III, Ralph Leighton, Frank Townsend, and John Valines. Jim Palmer, Mark Tobin, and other Hartney Greymont senior arborists also worked with this group and have, in turn, passed on time-tested and specialized techniques to all our arborists who currently care for your property.

Our philosophy is to carefully and aesthetically reduce the size of a tree's canopy by systematically lowering its height and containing its spread. Through the manipulation of a tree's structure, stress and strain are minimized by reducing the length of the lever limbs. Long lever limbs cause an increase in bending forces. The bending of wood initiates eventual branch failure directly, not the weight of the wood itself.

Interestingly, this technique has been recently validated in European research using Statics-Integrated Assessment methodology based on the principles of engineering. Widely utilized in Germany and other European countries, this method, developed after the study of over 3000 trees, provides models predicting the influence of crown reduction on the breaking safety of trees under environmental stress loads.

After pruning the white pine will better withstand windthrow

Rest assured that this knowledge and

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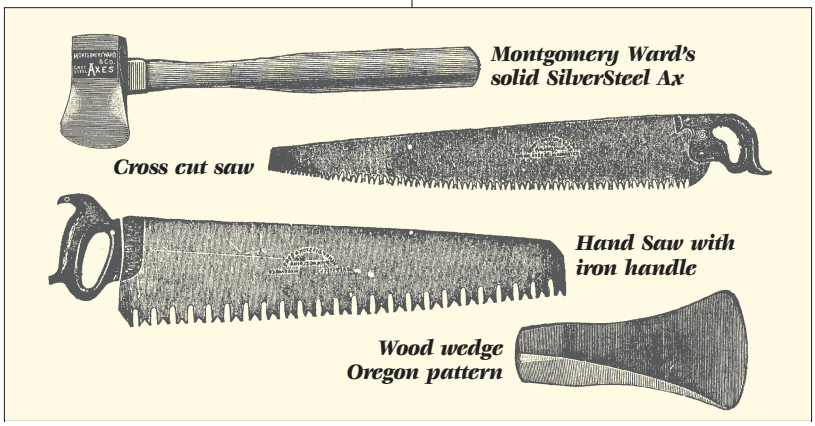
Dollars and Cents: An Arboricultural History

The ancient Egyptians and Greeks were among the first to care for trees. Commercial tree care in the U.S. began in the late 1800s, primarily on large estates in the East and upper Midwest.

Initially, tree care activities focused extensively on cavity treatments (such as filling or bracing) and other specialized techniques to extend the life of trees. Currently scientists believe that most cavity treatments are of little value, although the past focus on preservation is interesting. As with most things in our society preservation was based on economics.



Before the twentieth-century we were content with the tools of our trade as shown

Mature trees are composed primarily of large amounts of heavy wood. In the years before mobile cranes, log loaders, and chain saws, wood was difficult to cut, load, and move. Consider the simple tools of the days before World War II: axes, mauls, cross-cut saws, and hand saws.

Due to the lack of available equipment to effectively remove trees and dispose of the waste, it was much more economical to preserve trees, so preservation techniques were developed. The economic incentive for tree preservation was foremost, above and beyond any aesthetic or environmental considerations.

The first mechanized chain saws were available in 1944 and became widespread after WWII. The McCulloch Company introduced the first lightweight saw in 1948, weighing half that of previous models. Because of these equipment improvements the economics of tree care suddenly changed.

It became less expensive to remove trees than to preserve them. If a large tree blew over or sustained substantial storm damage, rather than leave it upright and preserve it, it was now less expensive to remove it from the property.

These mechanical innovations unintentionally led to the loss of arboricultural expertise, as increasingly more tree companies focused primarily on tree removal rather than on preservation efforts. This trend accelerated along with the spread of Dutch elm disease which caused the loss of millions of large mature trees throughout the eastern United States. The effects of these changes are still felt today. The majority of tree care companies focus on tree removal or clearing vegetation from buildings, roads, telephone poles, power lines, etc., rather than on the care and preservation of trees in landscapes.

Hartney Greymont is proud to continue the ancient and time-honored tradition of caring and preserving trees, not simply removing them.

The efficiency of the chain saw transformed arboriculture—maybe not for the best

Tree Statics: Tree Safety *continued from page 2*

expertise is brought with us on each visit to your property. We are ready to use our specialized protective pruning techniques on your trees, where appropriate. The dormant season is an ideal time to perform this type of tree care, as there is a physiological benefit for the tree during this time, and typically winter operations are less disruptive to the landscape. We would be pleased to help you assess the condition and structural integrity of your key trees to prepare for future and possibly damaging New England weather..

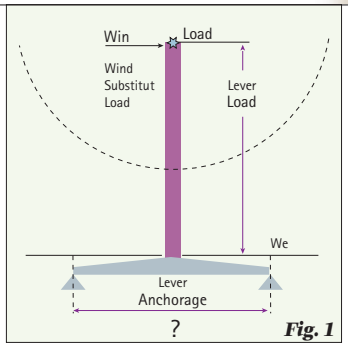


Fig. 1. The tipping process can be explained by understanding the tree-to-lever relationships.

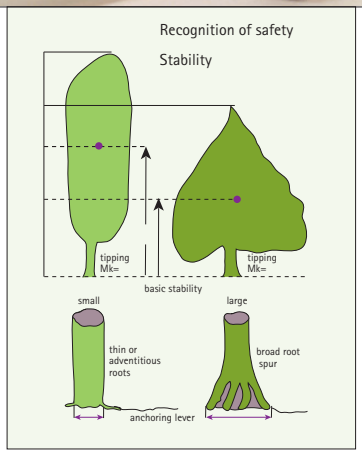


Fig. 2. The lever relationships influence stability on the load-side and the anchorage-side. The tipping moment of the slender tree is therefore disproportionately greater because the wind speed increases with distance from the ground.

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be ratcheted upward several inches per decade until their eventual eruption through the top of the soil. That is fast enough to make a century-old farm stony, but slow and hidden enough to allow for misinterpretation of stone accumulation processes.

Stone walls were not just fences separating neighbors, livestock, or crops. The walls were a response to the environmental changes caused by turning a forested region into farmland. Stones were removed from the fields and carted away by hand or with horses and oxen. These abundant stones were usually carried only as far as necessary and stacked. The earliest walls were actually linear landfills, merely collection areas for the cleared stones. In time, stacked walls became more deliberate constructions and an improvement on the haphazard dumps resulting from field clearing. Stacked walls eventually evolved into more formally-laid walls having stability and elegance.

Paying closer attention to stone walls from a scientific perspective helps eliminate some pervasive historical myths. We hope knowing a bit more about our stony soils will aid in your appreciation of New England's unique landscape.

Experience our Guarantee

If you are not satisfied with any treatment or completed job, let us know. We will resolve the situation to your satisfaction; no questions about it. Our goal is to not only make sure your trees, shrubs, and lawn are as healthy as possible, but also to provide you with the peace of mind a satisfaction guarantee can bring.

Calendar of Care

	OCTOBER	NOVEMBER	DECEMBER	JAN
Review trees & landscape with arborist for dormant care	■	■	■	■
Schedule winter pruning	■	■	■	■
Subsurface fertilize ornamental & shade trees	▒	■	▒	▒
Prepare trees to prevent winter storm damage	▒	■	■	■
Plant & transplant trees & shrubs	■	■	▒	▒
Structurally prune dormant ornamental & shade trees	▒	■	■	■
Antidesiccant treatments to evergreens	▒	▒	▒	■
Plan spring landscape projects		▒	■	■

*Antidesiccants are needed for sensitive, weak, or newly-planted trees, or for those getting too much sun.

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