

Storm Damage

by GARY L. KOLLER

This winter, storms with rapidly dropping temperatures, great snow accumulations and winds fluctuating from gentle to severe struck much of the Northeast. These conditions will cause the 1976-77 season to be long remembered for the discomfort and inconvenience caused to people across the nation. What may be overlooked or forgotten is the effect this winter phenomenon had on plant life.

In late autumn, Boston temperatures dropped quickly and hovered around zero. Although not dramatic, it was unusual for cold weather to arrive so early with a lack of snow to insulate and protect the soil. This allowed quick and deep penetration of frost into the ground and it struck the plants before they were fully acclimated to the full brunt of winter. Such a combination is particularly harmful to newly planted, semi-anchored plants as well as those marginally hardy specimens that are the delight of avid gardeners. Those who were wise and energetic applied a deep mulch in order to slow frost penetration and extend the growing season in the root zone. This one effort may have saved many fragile specimens.

On the 7th of January, Boston was struck by a snow storm that deposited 15.4 inches of snow in a 24-hour period. Even though the wind velocity was relatively low and there was little ice accumulation, many trees and shrubs suffered great structural damage. This resulted from the build-up of snow in the dense, twiggy branch structure which allowed ever increasing amounts to accumulate. Plants are remarkable in the stress they can endure, but the tremendous weight along with the occasional gusts of wind overcame their endurance and resulted in split crotches, sheared off branches, shattered limbs, and bent and twisted shapes.

At the Arboretum, minor damage affected specimens in all areas; however, in the area from the Administration Building to Bussey Hill damage was severe on the following plants or plant groups:

Acer sp.

Amelanchier sp.

Betula sp.

Celtis sp.

Cornus florida

Maackia sp.

Magnolia × *soulangeana*

M. virginiana

Oxydendron arboreum
Pinus strobus
Robinia sp.
Sophora japonica

Syringa sp.
Tilia cordata
Ulmus sp.

It saddens one to see stately specimens fifty to seventy-five years old ruined so quickly. In some instances a severely damaged plant represented our only specimen of a particular taxon. *Maackia chinensis*, for example, was full and picturesque and is now gaunt and pathetic looking. Its present appearance does not do justice to the species; however, this specimen cannot be removed until it is propagated and replaced. So it remains, attesting to the brutality of nature.

Visitors occasionally remark about broken stubs or large wounds on Arboretum plants and regard them as poor maintenance. What is overlooked is the fact that our maintenance staff gets so little help from the New England climate. Further south, winter snow and ice storms are infrequent and less severe, allowing gardens to display a larger percentage of perfect specimens. In the light of our problems, our plants are well maintained in terms of good arboriculture practices.

The positive approach to storm-damaged trees is not to lament the loss of a majestic specimen that cannot be restored to its former splendor; instead, the plant must be evaluated for the potential development of new artistic beauty or enhanced character, which can be by-products of breakage. Examples are the magnificent and stately white pines of New England that show the ravages of many storms, yet add a distinct flavor to the New England landscape.

Examples follow of some of the types of damage suffered by the Arboretum's collection this winter, along with remedial measures taken by our maintenance staff.

Long branches with insufficient girth have split from the weight of heavy ice and snow. Such damage can be reduced by occasional preventative thinning of the canopy.

The injured branch should be cut back to a large lateral limb, or to the trunk. On rare and valuable trees, fresh wounds sometimes can be pulled together, secured with bolts, and covered with grafting wax. Natural grafting will ultimately unite the tissue, but the branch will remain structurally weak. As a precaution against further injuries, thinning of the terminal end will be necessary. All photos: G. Koller.





Split crotches result when increasing stem girth and opposing canopy weight cause stress on narrow crotch angles, creating a structural weakness susceptible to storm damage.

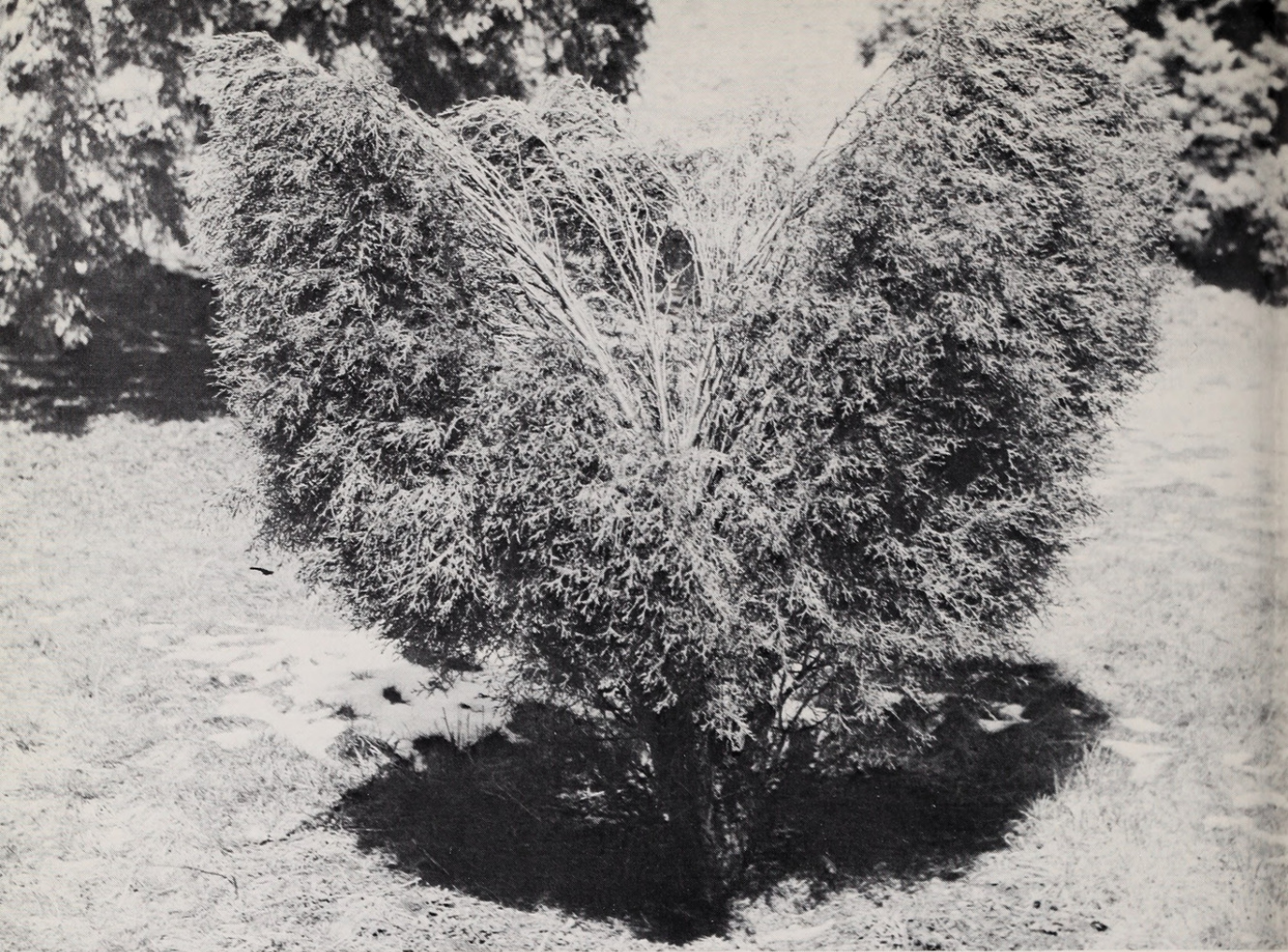
Preventative measures should begin early. In choosing small trees, avoid those with narrow, V-shaped crotches. Trees in your yard with this flaw should have their branches pruned flush with the crotch; the wounds will heal quickly and new branches soon will fill out the symmetry of the plant.

Structural weakness caused by years of stress made this crotch a prime candidate for winter storm damage.

Note the dark area at the upper edge of the wound. This indicates that a cleft due to physical stress had begun, along with disease-associated deterioration. Heavy snows, added to the existing stress, caused the limb to be ripped away at the crotch.



Once damage has occurred, the injured branch should be pruned flush with the trunk, and the ragged edges of the wound made as smooth as possible. Eliminate hollow areas that might trap and hold water, fostering the growth of disease organisms. Painting large wounds with tree paint is primarily cosmetic.



Left: Ice, snow, and wind can bend or twist structurally weak plants, sometimes causing a permanent change in configuration or irreparable breakage. In early autumn, susceptible plants should be staked, bound together with lacing, or covered with burlap to prevent or minimize damage.

If possible, accumulated heavy snow should be brushed off gently. Ice and crusted snow tends to cling to branches and foliage, and wood can be brittle when temperatures are low and external stress is great. Once damage has occurred, bent plants must be staked, sometimes permanently. Plants with flayed-out branches must be pulled back into their normal shape and belted or cabled into place.



Stripped bark, often the result of storm damage, also frequently results from incorrect pruning practices or mechanical damage from automobiles and grounds-care equipment. The large wounds that may occur are difficult or impossible for the tree to cover with protective bark.

If the injury is fresh and the flap of stripped bark is partially attached, the injured branch may be pruned away and the bark flap often can be pushed back into place and secured with nails. Exposed edges should be covered with grafting wax or wrapped with moist sphagnum moss. Natural grafting should result.



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