

TSUGA CANADENSIS AND ITS MULTITUDE OF VARIANTS

Tsuga canadensis,* or as it is commonly known, the Canadian, or Eastern Hemlock, has a natural habitat which ranges from Nova Scotia eastward to Minnesota and Illinois, and southward along the mountains to Georgia and Alabama. Not only does it make a superb specimen when grown as an individual in ornamental landscape planting, but it responds well to severe pruning, making it possible to keep it within bounds when used as part of a foundation design.

No other narrow-leaved evergreen has produced such a diversity of forms and, with the increasing interest in dwarf conifers, together with the growth in popularity of horticulture, especially of small and dwarf trees for small properties, the many variants are sought, named and propagated.

Seedlings of Canadian hemlock produce a multitude of variants differing from the normal plant, and many genetic forms have been discovered in the woods by chance while others have been found through planned searches and there is no doubt that more people are walking and camping in the woods today than ever before. Any dwarf or slow-growing variation of a tree located in a natural habitat, is at a serious competitive disadvantage as it would tend to be overgrown or shaded out by other woodland plants, resulting in a very poor survival rate. Canadian hemlock however, has the ability to persist in dense shade, and slow growing forms, therefore, have a better chance of succeeding ecologically where abnormal forms of other subjects might perish. *Tsuga canadensis* is commonly raised from seeds by nurserymen, and still other abnormal forms have appeared and been selected from beds of seedlings or from nursery rows. When one considers the common practice of choosing the best and most vigorous plants in a seedling lot and casting out the runts, one often wonders how many dwarf, pygmy or other abnormal types have been discarded.

* How the name *Tsuga* came to denote hemlock was amusingly related in, "The Hemlock Arboretum Bulletin No. 3" and is quoted as follows:

"In the beginning of scientific botanical practice the hemlock was included with the pines. It was labeled *Pinus canadensis* by Linnaeus in 1763. Michaux, the French botanist, in 1796 grouped it with the firs and named it *Abies canadensis*, while later scientists included it with the spruces and called it *Picea canadensis*. It was the celebrated Austrian botanist, Stephan Ladislaus Endlicher (1804-1849) who in 1847 used the name "*Tsuga*" which is the Japanese name for the hemlock, as a section in his genus *Pinus*. Later Elie Abel Carrière (1816-1896), a famous French botanist, in 1855, classified all the hemlocks into a separate group under the generic name *Tsuga*. Thus this important section of our North American conifers bears a Japanese name, given it by an Austrian, confirmed by a Frenchman and now accepted by scientists generally."

Some idea of the extent of variation in Canadian hemlock is brought out by the fact that in recent years the Arnold Arboretum has received plants or propagating material of fifty-two named and twenty-nine unnamed kinds. The twenty-nine unnamed plants were discoveries considered worthy, by the donors, of perpetuation at a botanical institution.

At the Hemlock Arboretum in Philadelphia, Pennsylvania, the late Mr. Charles F. Jenkins, the owner, attempted to assemble all the various forms of Canadian hemlock. His collection is reputed to have contained one hundred and ninety specimens when he passed away and the project was discontinued. Mr. Radcliffe Pike, Department of Horticulture, University of New Hampshire, who has been interested in hemlock variations for many years, told me that he suspects at least one abnormal hemlock could be located in every New Hampshire town.

Early in the eighteenth century, *Tsuga canadensis* was introduced to Europe where its beauty and desirability were well appreciated, leading to its widespread cultivation. Our Arnold Arboretum records show that variants have been returned to the United States from several European countries.

A search of the Arnold Arboretum's records also reveals that even in the 1880's Canadian hemlock variants were being received. Some were named and others, as is the case with many received today, bore notations such as "dense form", "dense pyramidal" or "variety". Among those named at that time were *Tsuga canadensis microphylla*, *T. c. atrovirens*, *T. c. fastigiata*, *T. c. macrophylla*, *T. c. compacta* and *T. c. pendula*, the latter being the famous Sargent Weeping Hemlock or *Tsuga canadensis* 'Pendula', in the latest usage.

The Sargent Weeping Hemlock is one of the earliest and most beautiful variants ever found and one of the most widely grown in the temperate regions of the world. The find, comprising four plants, was made prior to 1870 by General Joseph Howland near the summit of Mount Fishkill at Beacon, New York. The plants must have been relatively small in size for at that time they were moved down from the mountain and distributed. Two remained in cultivation in the Beacon area and two were sent to the Boston region, one to Mr. H. H. Hunnewell of Wellesley, Massachusetts and the other to Professor Charles Sprague Sargent of Brookline, Massachusetts, who later became Director of the Arnold Arboretum. Mr. Hunnewell's plant failed to survive but Professor Sargent's still exists and has developed into a superb specimen about twenty-eight feet in diameter and approximately seven feet tall. When "Holm Lea", the Charles Sprague Sargent Estate was subdivided in 1928, the portion of property containing the Sargent Hemlock was acquired by Mrs. Roger Ernst who has deep regard for the tree and provides it with every necessary attention. Those wishing to do so may view this magnificent specimen growing near the edge of the street at 170 Sargent Road, Brookline, Massachusetts. The fact that Professor Charles Sprague Sargent had so many plants named for him leads to the supposition that the Sargent Weeping Hemlock is also in this category. However, this is not the

case, as General Howland named it in honor of his New York neighbor, Henry Winthrop Sargent, cousin of Professor Sargent.

As would be suspected in a subject exhibiting such wide natural variation, a great many of the forms are extremely similar, for although discovered and collected from widely separated locations, many specimens appear identical. Some, which resemble one another, can be grouped as dense and shrubby, fastigate, fountain-like, small-leaved or weeping. It would be difficult if not impossible to find characteristics distinct enough to distinguish between those within similar groups and identify them exactly, should labels ever be lost or interchanged.

A common question asked when visitors to the Arboretum first view these variants is, "How were they developed?" The answer is that they occur spontaneously. However, considering the frequency and apparent ease with which the forms arise it is doubtful whether any possible good can come of continuing to name new variants unless they are particularly different or unusual.

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