NEW AND UNDER-UTILIZED ASIAN TREES FOR NORTH AMERICAN GARDENS

by Gerald B. Straley

Abstract. The growth characteristics and horticultural merit of eight Asian trees that are generally unknown in North American horticulture are discussed. Seven deciduous trees (*Sorbus hupehensis* 'Pink Pagoda', *Sorbus pallescens*, *Acer tschonoskii* var. *rubripes*, *Acer carpinifolium*, *Dipteronia sinensis*, *Heptacodium miconioides*, *Rehderodendron macrocarpum*), and one conifer, *Taiwania cryptomerioides*, have been observed for several years at the University of British Columbia (UBC) Botanical Garden in Vancouver, to determine their suitability for more widespread cultivation as street, park or garden trees

In 1980 the University of British Columbia Botanical Garden in Vancouver (U.S.D.A. Hardiness Zone 8), launched a very successful plant introduction program that has since been emulated by institutions in many other parts of the world.

To be considered for the program, particularly good seedling selections or hybrids are observed by the Garden staff, then narrowed to a few candidates, by a selection committee of local nursery growers, horticulturists, landscape designers, and others with an interest in new plants. The few plants selected each year are then grown on in the Botanical Garden nursery. Plants are sent to test stations around North America to determine their hardiness and adaptability to a wide range of growing conditions. The stock plants and cuttings or other propagation material are then sold to selected "participator", propagating nurseries. These nurseries agree to further propagate the stock and pay royalties to the Botanical Garden. In the meantime, new cultivars are named and registered by the Botanical Garden and promoted through information brochures and news releases before the plants are released to the public, on an agreed-upon release date (2,3). Initially, plants were selected that could be easily propagated and produced, especially fast-growing shrubs and groundcovers. The program has now been expanded to include a wider range of plants, including Pacific Northwest native plants (4), perennials and trees.

A source for new selection and breeding stock occurs in the UBC Botanical Garden, especially in the Asian Garden, one of North America's finest collections of predominately wild-collected Asian plants. During the past 15 years the staff of the Botanical Garden has amassed many temperate Asian plants, but among the larger collections of trees are maples (*Acer* species, with over 100 different accessions of about 35 species), mountain ashes (*Sorbus* species, with 85 accessions of 55 species and hybrids), and members of the family Styracaceae (4 genera, 27 accessions of 11 species. The collections often contain a number of individual trees of one species from different areas, grown together under similar growing conditions, where their characteristics may be compared. The Asian Garden is a mature, open forest of mixed native conifers, providing some dappled shade for understory trees and shrubs. The soil is sandy, glacial moraine, with a large amount of humus incorporated for water retention. In the relative cool Pacific Northwest, with rainfall of about 60 inches/year, supplementary water is not usually needed.

Seedlings displaying superior forms are being observed and a limited breeding program is underway. A few of the best trees have been or will be incorporated into the Plant Introduction Program. Under consideration for introduction are trees suited for street plantings, and others, better suited to parks and larger gardens and collections, due to their size, habit or growing requirements.

The first tree named and released to the nursery industry by the UBC Botanical Garden Introduction Program was *Sorbus hupehensis* 'Pink Pagoda' in 1988. This small tree grows to about 30 feet tall with a relatively narrow oval crown form. It has a long season of changing beauty, from the red young twigs and petioles, to the pinnately-compound leaves with leaflets of a deep, sea-green, turning multiple colors of yellow, orange,

red and burgundy in the fall. Flat-topped white flower clusters (corymbs) are followed by great masses of small fruits that turn pink in mid-summer, changing to white after leaf drop and usually turning back to pink in mid-winter before they drop or are eaten by birds (Fig. 1). They are the last of the *Sorbus* fruits to be eaten by birds in Vancouver. This cultivar should be hardy in zones 5-9.

Among the other members of the genus *Sorbus* being considered for introduction is one received as seed collected on Mt. Omei, Sichuan Province, China, in 1981, by Roy Lancaster, the great English plantsman. It was identified as *Sorbus pallescens*, although there is some question that it may be the closely related *S. xanthoneura*, or a hybrid. It is one of the simple-leaved *Sorbus* species, with alder-like leaves that are mid-green above and pale gray beneath (Fig. 2). Whatever it is, the individual under observation, now about 20 feet tall, could have great promise as an urban street tree, but needs testing in different climates to evaluate its potential. The limbs come out at right angles to the trunk and turn sharply upright, giving a beautiful narrow pyramidal shape. The flowers, produced in corymbs, are greenish-white, with pink stamens, followed by dull red and yellow fruits. Unfortunately, the flowers have a foul smell. The tree should be hardy in zones 5-9.

Of some 35 species of maples cultivated in the UBC Asian Garden, *Acer tschonoskii* has continued to impress those plant enthusiasts who have seen it. It is very rare in cultivation, especially in North America and very little has been written about the tree. It is too rare to have a widely accepted common name, but red-stalked maple is sometimes used. Our trees are the variety *rubripes*, from Manchuria and Korea, reported to be hardier (Zones 6-9) than the variety *tschonoskii* from Japan. Although it is attractive nearly throughout the year, it is at its best in early spring when the one to two year old twigs become bright pinkish-red, a prelude of things to come. In Vancouver this coloration lasts for about a month, usually in February or March. Then the prominent elongated bud scales enlarge to reveal young reddish leaves and later racemes of greenish-yellow flowers at the tips of young lateral shoots. The leaves become dark green after they fully expand, but their blood-red petioles are eye-catching throughout the summer (Fig. 3). Samaras begin to develop, but do not seem to mature in Vancouver, probably because the flowers cannot be self-pollinated. In early fall the leaves become orange-yellow. Color may be more intense in climates better known for fall color than is Vancouver.

Figure 1. Sorbus hupehensis 'Pink Pagota" — fruit and leaves

Figure 2. Sorbus pallescens - fruit and leaves

The trees were grown from seed received from Kwanak Arboretum in Seoul, South Korea in 1981. Two trees were planted out in 1983. The larger one of the two is now about 20 feet tall and nearly as broad. Although single-trunked at the very base, it has branched about 2 feet up - not a good habit for a street tree. It could probably be pruned into a single trunk. It has a fairly dense, broadly-oval crown form, with arching limbs, the lower ones nearly touching the ground.

Another Asian maple that can best be described as a novelty, at least among the hardy species, is

Figure 3. Acer tschonoskii — leaves

the hornbeam maple (*Acer carpinifolium*). This very "un-maple-like" maple is a favorite of our garden staff, for it is sure to stump all but the most knowledgeable plant people. As the name indicates the simple lance-shaped leaves, with prominent pinnate veins and regular marginal teeth, are indeed very hornbeam-like (Fig. 4). But, in typical maple fashion the leaves are borne in opposite pairs, and the flowers and samaras are also typical. The leaves turn a clear yellow before dropping in the fall. There are a number of maples with un-lobed leaves, including several that are evergreen, but most of them are grown only in warm climates.

The crown form is a broad, tear-drop shape. The leaves are thin and pale green in summer, turning a clear yellow in fall. Native of high elevations in northern Japan, it is probably hardy in zones 6-9.

Even more novel among the maples is *Dipteronia sinensis*, a graceful tree that deserves to be better known. It is the only other genus in the maple family. The name *Dipteronia* comes from di, meaning two and pteron, wing, from the shape of the fruits. The large pinnately compound leaves are very much like those of *Ailanthus*, but with more prominently toothed margins, and the large leaves are borne in opposite pairs (Fig. 5). The young twigs and petioles are bright red, contrasting nicely with the green leaves. Large panicles of small yellow-green flowers are produced at the ends of new growth in late spring or early summer, followed by the very interesting fruits that look like a pair of large elm samaras, attached at their bases. Al-

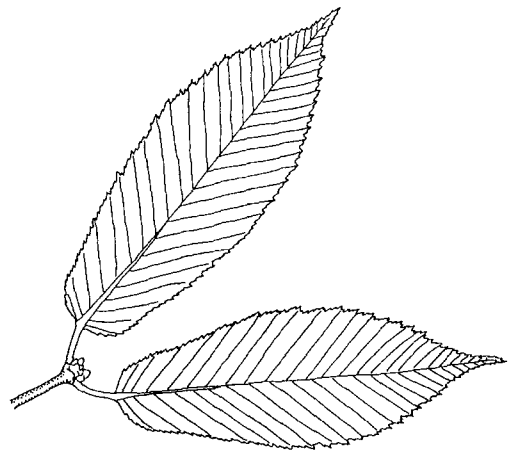

Figure 4. Acer carpinifolium — pair of leaves

though the shape is different, this pair of winged fruits is typical of the maples. Growth of young trees is rapid. A seedling started in 1988 and planted out in 1990 is now about 10 feet tall. A larger tree, about 30 feet tall and 15 years old, had its roots damaged by voles and died in 1990, but it had flowered well for several years and a very few seedlings had germinated beneath the tree. It should be hardy in zones 7-9. More information on this novel tree is covered elsewhere (5).

Heptacodium miconioides is a Chinese member of the honeysuckle family that was originally promoted in North America as a shrub under the name, *H. jasminoides*, a name that is now considered to be a synonym (1). It is still a relatively unknown plant outside botanical gardens and

Figure 5. Dipteronia sinensis — fruit and leaves

arboreta. It should be re-considered as a small, few-trunked tree, growing to about 20 feet. It might also be trained as a single-trunked standard, although suckering is likely to be a problem. In colder climates (zone 6 and lower) it might be tried as a die-back shrub. With its attractive pale brown, shredding bark, it could be used as a substitute for crape myrtles (*Lagerstroemia indica*) in slightly cooler climates, where crape myrtles do not grow or do not flower well, due to a lack of summer heat. Fragrant white flowers are produced in large panicles in late summer, at a time when there are few large shrubs or small trees in flower (Fig. 6). During long, mild falls, the flowers are followed by the attractive enlarged red calyx of each flower.

Rehderodendron macrocarpum, Rehder's styrax, from China, is a very rare tree, both in nature and in cultivation. It is an attractive small tree, growing to about 30 feet, with arching branches, dark green, lance-shaped leaves and bright red new twigs and petioles. In mid-spring, white bell-like flowers are produced in abundance, hanging from the limbs (Fig. 7). They permeate the air with their strong orange-blossom fragrance. The woody fruits are green flushed with dull red and copper, looking like slender pears, and are attractive from summer to leaf drop. The tree is so rare that it has not been tried in hardiness zones colder than 8, but may be hardy from 6-9.

A poorly-known Asian conifer that has proved to be a surprisingly hardy tree in Vancouver is *Taiwania cryptomerioides*. It has graceful sweeping branches and sharp, gray-green needles similar to *Cryptomeria* (thus the species name) (Fig. 8). The needles are grayer, longer and sharper than those of *Cryptomeria*. It is native to the island of Taiwan and in nature grows to nearly 200 feet

Figure 6. Heptacodium miconioides — flowers and leaves

Figure 7. Rehderodendron macrocarpum — flowers and leaves

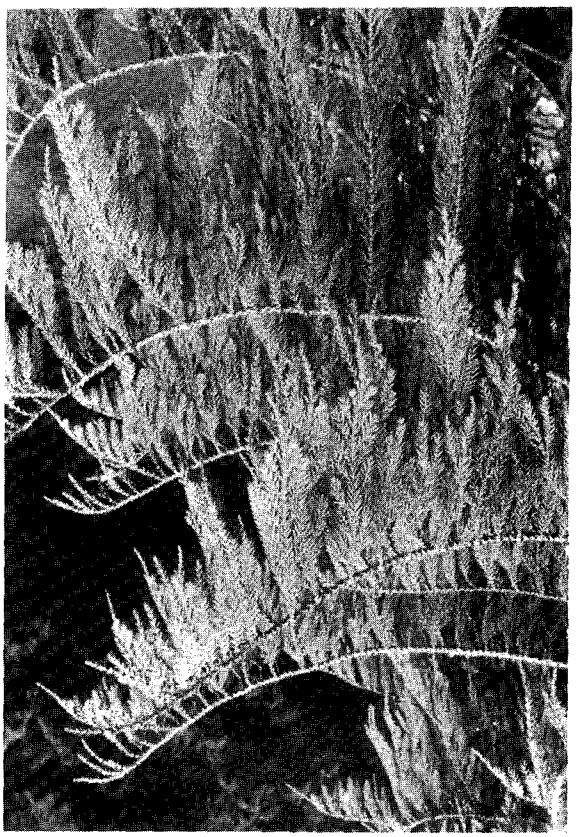

Figure 8. Taiwania cryptomerioides — habit of branches

tall, although it stays smaller in cultivation. It certainly has potential as a park and garden tree along the Pacific Coast, at least from Vancouver to southern California (zones 8-10). Several specimens of various sizes and from different areas have survived recent winters in Vancouver, with record low temperatures of around 0F.

Although these trees all seem to have potential for street or park trees, we need to learn more about them over a large geographic area. A few specialty nurseries in North America are beginning to grow at least some of these attractive trees. Hopefully, they will be tried in a broader range of growing conditions to see how they respond to various sites, soil conditions, drought, and winter cold and summer heat.

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Résumé. Huit arbres originaires d'Asie généralement inconnus du milieu horticole en Amérique du Nord sont décrits et examinés.

Zusammenfassung. Es werden acht asiatische Bäume beschrieben und vorgestellt, die allgemein unbekannt sind im nordamerikanischen Gartenbau.