Parrotia Persica: An Ancient Tree for Modern Landscapes

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This unusual member of the witch-hazel family adds grace and beauty to the garden throughout the year.

> Superb woods of gigantic oak, beech, ash and walnut trees, of apple, pear, cherry, plum and apricot trees, gladdened, though leafless, the eyes of the spectator, deeper in the mountains, where the foot of a European and botanist never yet trod . .
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> —F. Parrot, *Journey to Ararat*, 1845

The land of Persia, now known as Iran, has held a storybook fascination to Westerners ever since Marco Polo brought back tales of exotic customs and ancient cities. Botanists too have made pilgrimages to this mountainous country, bringing back such spring bulbs as tulips, narcissus, and fritillaria that have since become horticultural standards.

Few people, however, realize that in addition to bulbs, a rich woody flora exists in certain provinces of Iran. One of the more noteworthy plants is the Persian ironwood,*Parrotia persica*, a little-known member of the witch-hazel family (Hamamelidaceae). This group of plants is familiar to most gardeners for its hardy shrubs, the yellow-flowered witch hazels and corylopsis, as well as the delightful fothergillas, native to the southeastern United States. The family also includes several obscure tropical genera—*Trichocladus*, *Diocoryphe*, *Rhodoleia*, and *Altingia*—as well as tree species, such as the sweet gum, *Liquidambar styraciflua*, and *Parrotia persica*, the subject of this article.

Persian ironwood is considered by many horticulturists to provide interest in every season. However, its flowers, appearing as early as March in Philadelphia, are only noticeable upon close examination. Petals are lacking, but a dense cluster of scarlet stamens contrasts beautifully with the chocolate-brown, hairy bracts—a beautiful combination of colors that works well in early spring flower arrangements. British writers describe these flowers as producing a hazy, red effect en masse, but I have never seen this display in the United States and suspect either that they are growing different strains or that their climate maximizes flower production.

The new foliage first appears with a reddish color (much like gamey meat) but turns in time to a lustrous medium green. The leaves are very similar to those of fothergilla and witch hazel, eight to ten centimeters long (3 to 4 in), with an asymmetrical base and a wavy, round-toothed leaf margin above their midpoint. Fall and winter are the seasons when *Parrotia's* stock begins an uptick. Its autumn colors are spectacular, at its peak a mix of scarlet, maroon, orange, yellow, and pink. It is similar to the fall hues of fothergilla—an impressionistic splash of vivid colors.

Beneath its canopy of foliage one commonly finds a multi-stemmed trunk sheathed in a subtly beautiful, mottled bark. As with most trees displaying exfoliating bark, this character is not as apparent in the tree's youth

as in its old age. *Parrotia's* bark, while similar in pattern to *Pinus bungeana* or *Platanus* species, is unique in its color, showing irregular splotches of beige, tan, silvery gray, and silvery brown, which seem to flake off most heavily in the fall.

Parrotia's Origins

Of the five floristic regions of Iran, *Parrotia* occurs wild in only one, the Hyrcanian Region. This area falls within the provinces of Gorgan, Mazandaran, and Ghilan, and slopes from the Alborz mountains of northern Iran northward to the southern shores of the Caspian Sea. The Alborz rise as high as 5600 meters (18,375 ft) and form an effective barrier to rain clouds, making the region one of the wettest in Eurasia. Annual rainfall totals can reach 200 centimeters (80 in) in Ghilan.

Climatically, the region resembles the coastal regions of northern California and the western slopes of the Sierra Nevada mountains. The weather is humid and mild, with a relatively limited range of temperature fluctuations. Spring is the driest part of the year, and fall and winter the wettest.

Absolute minimum temperatures in some of the cities on the Caspian coast reach -9 degrees Centigrade (15 F), so it is probably safe to assume that at higher altitudes *Parrotia* is subjected to temperatures around -17 degrees Centigrade (0 F). One striking difference between the Caspian and northern California flora is the relative paucity of conifers that are found in Iran. While the northern half of California has almost two dozen species of conifers, only *Thuja orientalis, Cupressus sempervirens, Taxus baccata,* and two species of *Juniperus* are found on the north slopes of the Alborz, in limited, sporadic distribution.

The Hyrcanian flora shatters our preconceptions about this presumably arid country since over 200 woody taxa have been catalogued from this region, including such familiar genera as *Acer* (maple), *Betula* (birch), *Carpinus* (ironwood), *Cornus* (dogwood), *Fagus* (beech), and *Quercus* (oak). In checking the records of the Arnold Arboretum, about a third of these 200 taxa are represented on the grounds, although many of them have a wide Eurasian range and were not necessarily collected from Iran.

Close-up of the bark, Parrotia persica. *Photograph by M Dirr.*

The trees of the Caspian forest that are found at higher altitudes, around 2130 meters (7000 ft), include *Alnus subcordata, Acer hyrcanum, Ulmus glabra, Carpinus orientalis,* and specimens of *Fagus orientalis* approaching 46 meters (150 ft) in height. The understory consists of *Erythronium, Scilla, Blechnum, Galium,* and a blueberry with beautiful fall color, *Vaccinium arctostaphylos.*

Next to the sea, on the Caspian Plain, the climate supports a humid, mossy forest, in which *Quercus castaneaefolia* dominates an understory of *Albizia julibrissin, Diospyros lotus, Gleditsia caspica,* and *Buxus sempervirens.* Here too *Pterocarya fraxinifolia,* a

member of the walnut family, forms thickets along streams, and one also finds *Mespilus germanica*, the medlar, with its edible, rosaceous fruits.

Parrotia persica is said to be found from sea level to over 900 meters (3000 ft) elevation, and our propagation files record shipments of seed collected wild at 20, 200, and 400 meters. On steep slopes, it forms forests in association with *Carpinus betulus* and the understory herbs *Cyclamen elegans*, *Hypericum androsaemum*, *Primula heterochroma*, and *Epimedium pinnatum*.

In the U.S.S.R., *Parrotia* is found on the western side of the Caspian Sea in the Talysh forest. From what I could determine from examining specimens in our herbaria and from published accounts, it grows in a very limited area of the southeastern Caucasus mountains. The northernmost location I could identify was the Azerbaijani town of Masally, about 40 miles north of the Iranian border.

A number of British collectors have recently surveyed the flora of Iran, including Roy Lancaster, John Simmons, and T. F. Hewer. Simmons, a curator from Kew Gardens, visited Iran in 1977, just prior to the outbreak of hostilities with Iraq. He describes with eloquent awe one stand of *Parrotia* that he visited:

> But we were not disappointed by the parrotias which formed unique stands To go amongst these unexpectedly massive trees was to step back in time Great flecked trunks, the size of beech with aged specimens grafting boughs where they touched, and all festooned with dripping mosses The stillness of this scene and its associations was almost mystical, for beneath their seasonal shade grew the Caspian box, *Buxus hycanus*, and the monocotyledonous shrubs, *Danae racemosa*, with its large red berries, and

The oldest specimen of **Parrotia persica** *at the Arnold Arboretum, #2230, planted in 1881. Photograph by M. Dirr.*

Ruscus hyrcanus, the Caspian butcher's broom, also fruiting, with a straggling *Smilax* making a related trio. It is an Hyrcanian element, that is, a relic of the great Hyrcanian flora that dominated the Holarctic region during the late Tertiary period and this particular fragment of forest was seemingly unusually well preserved and in itself a rarity, a refuge amongst the refugia. The violent reds and yellows of the parrotia's autumn foliage have an almost unreal quality and happily too the seedlings from this ancient forest are now showing this inheritance at Kew—though, as hoped, each small tree is different, some more red, others yellow, so increasing the diversity available for gardens.

Introduction into Cultivation

The first published reference to *Parrotia* was by the French botanist Augustin de Candolle, who in 1830, using specimens collected by Hansen, described the plant as a species of *Hamamelis*, *Hamamelis persica*. A year later Karl Anton Meyer published an account of his collections in the Caucasus and correctly assigned the tree to its own genus, renaming the plant *Parrotia persica*, in honor of F. W. Parrot, a German naturalist who collected in the Caucasus and Turkey and was the first European to scale the massive Mount Ararat in 1829.

By 1840, *Parrotia* was reported in cultivation in Russia, at the botanical garden in St. Petersburg, and Kew Gardens received a specimen from St. Petersburg the next year. By 1880, *Parrotia* reached the United States, growing at the Harvard Botanic Garden in Cambridge, Massachusetts. The Arnold Arboretum's oldest specimen originated as a cutting from this plant in 1881. Indeed, most of the older specimens of *Parrotia* growing in the United States probably trace their lineage back to the Harvard plant.

The collection of the Arnold Arboretum holds a number of accessions of varying ages, giving us a good indication of *Parrotia's* rate of growth here in Boston. Our largest specimen, from 1881 (#2230), is growing near the Center Street wall at the base of a small slope and is now crowding its neighboring *Pterocaryas* and witch hazels. In its 108 years, it has attained a breadth of 23 meters (75 ft) and a height of 18 meters (60 ft), and developed a thickly leafed, broadly domed canopy. It is multiple-trunked with eight main trunks, two of which are almost a meter and a half (5 ft) in circumference near their bases. It is quite possibly the largest specimen of *Parrotia* in North America and certainly one of the largest in cultivation anywhere.

Our two most recent accessions of *Parrotia*, planted near the original tree, were sent to us as seed in the 1970s from the Botanic Garden in Tehran. The older (#541-75-A) came from seed collected at Nouhahr and is 2.5 meters tall (8 ft), with a 35-centimeter (14 in) circumference. Its neighbor (#490-77-A) was grown from seed collected at Sinangan in the province of Mazandaran, and is now three meters high (10 ft) and multi-stemmed. Between these saplings and the aged giant is a grafted scion of our original plant, now 32 years old, with a height and breadth of 8.5 meters (28 ft). From these four trees we can see that *Parrotia* generally grows more in width than in height and that, when young, it can grow 20 to 30 centimeters a year.

The Arboretum's original *Parrotia* has been used in a number of research projects as well as being a source of propagation material. In 1970, A. Linn Bogle used this tree in a comparative study of floral morphology and vascular anatomy in the witch-hazel family, and in 1980 William Buikema, a Harvard biology student, used the plant in a chromosome study.

Hybrids and Cultivars

Despite its century and a half of cultivation, there has been limited selection and hybridization work with *Parrotia*. *Sycoparrotia semidecidua* is the product of hybridization with a near relative from Asia, *Sycopsis sinensis*. This hybrid is quite rare and, when planted outside at the Arboretum, failed to survive the winter of 1981, in which the temperature reached a low of -21 degrees Centigrade (-10 F). One wonders whether a hybrid with *Fothergilla* or *Hamamelis* would be possible.

One particularly promising selection of *Parrotia* is the cultivar 'Pendula,' a weeping form of the species. The noted English plantsman Roy Lancaster told me that this cultivar "apparently was selected from a batch of seedlings at Kew in 1934 by its propagator, the late Charles Coates." It forms a compact mound of arching, pendulous branches, adding a graceful habit to the assets of splendid bark and vivid fall foliage.

Many weeping trees are at their best when a light dusting of snow outlines their cascading architecture, and the reader can easily imagine how beautiful the weeping *Parrotia* would look with its mottled bark contrasting with the fresh snow. I recommend planting the tree as a specimen in a conspicuous place—on a lawn, by a walkway, or in a small multi-leveled garden.

Parrotia persica, *from Curtis's Botanical Magazine, 1868, 3rd ser., vol. 24, tab. 5744.*

Parrotia persica 'Pendula' has only recently been brought to the United States: the Arnold Arboretum and North Carolina State University both have imported plants within the last few years. With its gracefully mounding habit and brilliant fall color, this cultivar is sure to become more widely available in the near future.

Propagation

Like many members of the Hamamelidaceae, *Parrotia* roots quite easily, but unlike many of its tribe, it *will* break bud and leaf out after it has been overwintered. In a cutting trial a few years ago, I compared eight different hormone treatments, and two of them resulted in over 90 percent rooting. In one, a talc-based powder containing 0.8 percent indolebutyric acid (IBA) was used, while in the other, the basal ends of the cuttings were soaked for 24 hours in an aqueous solution of 0.04 percent IBA. In both cases, the cuttings produced extensive root systems and grew well after being potted up.

In a more recent trial with the cultivar 'Pendula,' every cutting of the lot treated with 0.5 percent IBA (dissolved in 50 percent alcohol) rooted when placed under mist in a medium of pumice, perlite, and shredded peat (6: 3: 1 by volume).

The seeds of *Parrotia* show a dormancy requirement similar to those of *Hamamelis*; that is, they germinate after being exposed to a warm stratification period of five months followed by a cold stratification period of three months.

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