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For persons who are interested in the showy fruits of trees and shrubs which remain on the branches until late in the autumn or through the winter this is a good time to study the American species of Hawthorns (*Crataegus*), although the leaves of many of these plants have already fallen. A large part of the species in the collection on the eastern slope of Peter's Hill were not known ten years ago and many of these plants are still too small to produce fruit, and now the most interesting American Hawthorns in the Arboretum are on the bank just east of the Shrub Collection and easily reached from the Forest Hills Gate.

The handsomest American species to be seen here now is *Crataegus nitida*, one of the best garden plants of the genus as it is represented in North America. It is a native of the bottom-lands of the Mississippi River in Illinois opposite St. Louis where it grows into a tree of considerable size for a Hawthorn. It is flat-topped with wide-spreading branches; the leaves are dark green and very lustrous; the small flowers are produced in innumerable clusters, and the fruit of medium size which now covers the trees is orange-red, long persistent and makes a good contrast to the bright red and yellow leaves which have hardly begun to fall.

Crataegus coccinioides and *C. fecunda* from the neighborhood of St. Louis, like *C. nitida*, have been growing in the Arboretum for thirty years and are now broad bushy trees covered with fruit, although the leaves are beginning to fall. *Crataegus coccinioides* has large broad leaves and very compact semiglobose clusters of large flowers which are followed by large dull red globose fruits, which are also in compact clusters and are produced every year in great confusion. *Crataegus fecunda* is one of the so-called Cock-spur Thorns with large, thick, shining leaves, rather small flowers, and large, oblong, drooping, shining fruits which do not all fall until winter.

Crataegus pruinosa can also be seen here covered with fruit although the leaves are gone. This small tree is the type of one of the distinct and most widely distributed groups of the genus, the Pruinosae, which are distinguished by their large showy flowers, thick leaves and fruit which matures late in the autumn without becoming soft, sometimes remaining green and sometimes turning bright red and usually covered with an abundant glaucous bloom. On *Crataegus pruinosa* the large, depressed, globose fruits turn bright scarlet and remain on the branches in good condition until late in the season; these, as well as the large blue-green leaves and the large flowers with the bright rose-colored anthers of the twenty stamens, which are produced in wide and abundant clusters, make this a desirable ornamental plant.

Equally handsome but quite different in appearance is *Crataegus succulenta*, one of the Tomentosae Group. This is a late-flowering species with small flowers in broad flat-topped clusters; these are succeeded by globose fruits drooping on long stems, and until October remain small and hard but later, and when fully ripe, enlarge and become deep scarlet with soft, orange-colored, succulent flesh, and in this condition are soon eaten by birds.

On this bank and close to the boundary wall is a plant of *Crataegus Carrierei*. This small tree is of doubtful origin, all the individuals having been obtained from a single seedling which appeared spontaneously several years ago in the nursery of the Jardin des Plantes in Paris. In some ways it resembles some Mexican species and it might be Mexican did not its hardiness in the Arboretum indicate that its home was in a colder country than Mexico. The fact that seedlings are identical with the parent seems to preclude the idea of hybrid origin; but whatever this may have been *Crataegus Carrierei* is an ornamental plant of the first class. It is now covered with its thick, pointed, lustrous leaves which are still green or only slightly tinged with yellow and which set off to advantage the large, light orange-red oblong fruits which are produced in great abundance.

Very beautiful, too, now is the Washington Thorn, *Crataegus cordata*, of the foothill region of the southern Appalachian Mountains and of southern Missouri, although it will be more beautiful probably a fortnight later when the leaves will have taken on their bright autumn colors of orange and scarlet; now they are just beginning to turn red and the shining surface contrasts beautifully with the small round scarlet fruits. The Washington Thorn should be more generally planted for it has much to recommend it. It is a slender, narrow tree sometimes thirty feet tall; it is one of the latest of the Hawthorns to flower and the flowers, which are not large and dull white in color, are produced abundantly. The leaves are small and nearly triangular, and the fruit, which ripens in October, remains in good condition on the trees until spring. The only objection to this tree is the brittleness of the branches which are often split or broken by severe storms.

On the left-hand side of the Peter's Hill Road, going from the Hemlock Hill Road across Bussey Street and between a large White Oak and the group of Crabapples, is a collection of shrubby Hawthorns. Some of these, like *Crataegus Buckleyi*, *C. foetida*, *C. apposita*, *C. nemoralis*, etc., are old enough to show their habit, and the beauty of their autumn foliage and of their fruits. The plants of this group, which is called *Intricatae* from the first species described in it, are all small shrubs, or occasionally small trees in the south, with very large flowers and large, highly colored fruit. Species in this group are found from New England to Georgia, and to Ontario, Michigan and Missouri; they appear to be most abundant in Pennsylvania, but are rare in the West. Until a dozen years ago they had been entirely overlooked by American botanists and were unknown in gardens, with the exception of *Crataegus intricata*, which had been grown and described in the Botanic Garden at Copenhagen. Nearly all the species which are known are well established in the Arboretum and promise to become an important contribution to American gardens in which their dwarf habit, large flowers and handsome fruits will make them valuable.

A few plants in the Arboretum are still conspicuous for the beauty of the autumn color of their leaves. The most conspicuous, perhaps, is *Parrotia persica*, a member of the Witch Hazel Family and a native of the Trans-Caucasus and Persia. Sometimes a small tree, it here grows in the form of a high broad bush. The flowers and the fruit are not conspicuous but the leaves, which in shape resemble those of the native Witch Hazel, are now splendid with tints of clear yellow, orange and red. A plant can be found in the Witch Hazel Group near the junction of the

Meadow and Bussey Hill Roads, and there are three larger plants on Hickory Path near the Centre Street wall.

A handsome plant in flower, the value of *Fothergilla major* of the Appalachian Mountains is increased by the autumn color of the leaves which are now light orange and red. Plants may be seen to advantage on Azalea Path and in the Shrub Collection.

The handsomest, perhaps, of the Barberries which have been successfully cultivated in the Arboretum is the Japanese *Berberis Regeliana*. This plant was introduced into the United States many years ago by the Parsons Nursery at Flushing, Long Island, and was distributed under the name of "Hakodate." It is a medium-sized shrub with large pale yellow flowers in long clusters, and large thick leaves which turn in the autumn to brilliant shades of orange and red, and handsome showy fruits. The leaves are now falling rapidly but the fruit will remain on the branches for several weeks longer. Large plants of this Barberry can be seen in the Barberry Group on Hickory Path. In this Group and in the Shrub Collection are plants of the Japanese *Berberis Sieboldii*, with dull deep red leaves, and two Chinese species just beginning to take on their autumn colors, *Berberis diaphana* and *B. dictyophylla*. The former is a compact, low, round-topped shrub with large solitary flowers and fruits, and leaves which in the late autumn are hardly surpassed in the brightness of their scarlet tints. *Berberis dictyophylla* is a taller shrub with erect branches and just now the red on the upper surface of the small spiny leaves contrasts finely with the silvery color of their lower surface. These three Asiatic species, which are still rare in gardens, deserve more general cultivation.

The autumn colors of the leaves of the Yellowroot, (*Xanthorrhiza apifolia*), a pale canary yellow and green, add to the value of this useful little plant which has been largely used as an undershrub along several of the drives in the Arboretum. It is admirably suited for this purpose as it rarely grows more than a couple of feet high and spreads rapidly into dense masses which take entire possession of the ground. The small purple flowers which appear before the leaves and the fruits do not make much show, but the color of the foliage is good throughout the season.

Among the large number of Cotoneasters which have recently come to the Arboretum from western China *Cotoneaster Dielsiana* has become well established and promises to be a valuable decorative plant in this climate. It is a shrub with arching stems and branches which just now are covered with bright red fruits and small leaves which have turned deep bright reddish purple. A plant of this interesting shrub can be seen on Hickory Path in front of the Centre Street wall.

The slender leafless branches of *Callicarpa japonica* are now covered with the small violet-colored fruits of this hardy shrub which is a desirable addition to northern gardens, although the fruits are smaller and less showy than those of the American species, the so-called French Mulberry of the southern states which is not hardy here, and of several of the Asiatic species which are not yet established in the Arboretum. A group of these plants will be found on the left-hand side of Azalea Path close to its entrance from the Bussey Hill Road.

The Arboretum will be grateful for any publicity given these Bulletins.