marked by large pale dots and nearly an inch long, and rather longer than broad. The fruit ripens about the middle of October as the leaves turn color and does not entirely fall before December. Another member of the same group as the last *C. durobrivensis* (Dilatatae), the Rochester Thorn, is valuable for the winter garden because the dark crimson fruit, which is nearly three-quarters of an inch in diameter, remains on the branches uninjured by frost until midwinter. It is a large shrub with flowers an inch in diameter in many-flowered clusters.

Crataegus pruinosa. This is the type of another northern group distinguished by its thick leaves usually broad at the base with long slender stems, large flowers and large fruit often broader than high, frequently angled, green or red covered with a pale bloom, surmounted by a prominent calyx raised on a tube, and hard dry flesh. Many of the species are handsome in spring and autumn and the type of the group, *C. pruinosa*, especially deserves the attention of planters. It is a small tree which grows naturally from southern Vermont to Missouri and along the foothills of the Appalachian Mountains. It has thick, blue-green leaves; the flowers are sometimes an inch in diameter and conspicuous from the twenty large, deep, rose-colored anthers, and the fruit, which is arranged in broad drooping clusters, is subglobose, rather more than half an inch in diameter, apple green until late in autumn, when it becomes dark purple red and very lustrous.

Dwarf Hawthorns. From the middle to the end of October there is not a more interesting group of small shrubs in the Arboretum than that of the species of *Crataegus* in the Intricatae Group which is arranged on the lower side of the road at the eastern base of Peter's Hill next to the Crabapple Collection. These shrubs are confined to the northern United States and Canada, and are perhaps more numerous in Pennsylvania and Michigan than in other parts of the country. They bloom later than most of the American Hawthorns, the flowers of all of them are large and conspicuous with yellow, rose-colored or pink anthers. The fruit ripens late and is scarlet, red, orange, yellow or russet, and its beauty is increased by the brilliant colors of the leaves at the time it ripens. A large number of these plants are now in the collection. One of the handsomest this year is *C. cuprea* with scarlet foliage and russet or copper-colored fruit. This little shrub was first detected in a vacant lot in the city of Wilmington, Delaware, and is not known to grow naturally beyond the limits of that city. *C. Delossii*, found growing several years ago by the side of a road near Toronto, is unusually full of its orange and red fruit this autumn. This species differs from the others of the group in the large number of fruits (ten to fifteen) compactly arranged in dense clusters. The autumn leaves are green and yellow. Other species of this group deserving attention are *C. infera* from the neighborhood of Sellersville, Bucks County, Pennsylvania, with orange-red fruit and brilliant orange and red autumn leaves; *C. fructuosa*, a shrub five or six feet tall which has only been found on the Serpentine Ridge near West Chester, Pennsylvania, with deep orange-red fruit in small erect clusters, and dark red-purple autumn leaves; and *C. modesta*, a little shrub often not more than

twelve or eighteen inches high, first noticed on a hill near Rutland, Vermont, but now known to grow in many places in southern New England and to range into eastern Pennsylvania, and conspicuous in the autumn with its bright scarlet leaves and green, yellow or orange and red fruits. Two species of the group in the southern Appalachian Mountain region, *C. Buckleyi* and *C. Boyntonii*, are small trees and have grown in the Arboretum into dense pyramids now eight or ten feet tall, and still covered with dark green leaves which later turn to shades of orange and scarlet.

The Tulip-tree (*Liriodendron*) is unfortunately not a native of eastern Massachusetts, although it occurs in the western part of the state and in Rhode Island. It is perfectly hardy here, and has grown to a large size in the neighborhood of Boston. It is therefore surprising that this tree is not more generally planted here for the American *Liriodendron* is one of the most magnificent trees of the northern hemisphere, growing as it does when all the conditions of soil and climate favor it, as in the rich "coves" of the southern Appalachian Mountains, to the height of two hundred feet and forming a trunk eight or ten feet in diameter and free of branches for half its height. The tulip-shaped flowers and the leaves, which are of unusual shape, are beautiful and interesting, but attention is now called to this tree on account of the beautiful color of the autumn foliage. This when the leaves first lose their green color is bright clear yellow but later as they begin to fall becomes darker and the color of old gold. In October in those parts of the country like Delaware County in eastern Pennsylvania, and on the slopes of the southern mountains where the Tulip-tree forms a considerable part of the forest and often raises its head high above its humbler companions, its spire-like bright golden crowns produce a beauty which can be found in no other part of the world. The Chinese Tulip-tree of recent discovery has not proved hardy in the Arboretum. It is a much smaller tree than the American species with smaller flowers but larger and handsomer leaves.

Pyrus Calleryana. This Pear-tree, which was raised here from seeds collected by Wilson in western China, has less beautiful flowers than many other Pear-trees, and the russet-colored fruit is not more than half an inch long. It may, however, prove to be one of the most valuable plants introduced into the United States by the Arboretum, for it is now believed by American pomologists that it will prove to be a blight-resisting stock on which to graft the varieties of garden pears. The Arboretum trees appear to be the only ones in the United States large enough to flower and this year they have produced a good crop of fruit which will be sent to the Department of Agriculture for distribution.

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