The Arboretum is suffering from the severe drought of the last two months. September is reported to have been the driest in the last fifty-one years, and, in spite of the exceptionally heavy snowfall of the winter, the precipitation for the year is now some eight inches below the average. The result of this has been that the leaves which take on their autumn colors usually in early October have dried up and are already falling from many plants.

The Autumn Color of Leaves. It does not appear to be generally understood that the leaves on different individuals of the same species do not assume the same shades of color, and that there is considerable variation on different individuals in the time of change. This is well illustrated by the collection of Red Maples (Acer rubrum) in the Arboretum. From many of the plants the leaves have changed color and have already fallen; from others probably one-third of the leaves have fallen and on others the leaves are as fresh and green as they were in July, all the plants growing practically under the same conditions. The Red Maple tree across the drive and opposite the entrance to the Administration Building has been during the past week the most brilliant object in the Arboretum. Landscape gardeners who may wish to use trees and shrubs for autumn effects can find useful suggestions in this tree, for it has been raised from a graft taken from a tree with leaves of exceptionally brilliant autumn color. This exceptional color has been preserved, and indicates that it is possible to multiply by grafting plants with leaves of unusually brilliant autumn color just as it is possible to propagate trees with leaves abnormally marked with yellow or
otherwise abnormal, or with double or other unusual flowers, or with improved fruits. Little has yet been done anywhere to propagate trees with exceptionally brilliant autumn foliage, but the field is an interesting and an important one for the makers of autumn gardens. That the making of such gardens will sooner or later receive attention in this country there can be little doubt, for the pleasantest months of the year in eastern North America are the autumn months, and in no other part of the world is the autumn foliage so brilliant and varied, and nowhere else are the fruits of trees and shrubs more abundant, varied and interesting.

The "Flowering" Dogwoods. Among the smaller trees with scarlet or crimson autumn foliage none is more beautiful now than the so-called Flowering Dogwood (*Cornus florida*) which is unusually brilliant this year in its shades of crimson, scarlet and green. Its autumn beauty is increased by the contrast of the color on the upper and lower surfaces of the leaves for only the upper surface changes color, the lower surface retaining the pale sometimes nearly white color of the summer. For regions with a winter climate as severe as that of eastern Massachusetts the eastern Asiatic relative (*Cornus kousa*) of the native Flowering Dogwood is a more reliable plant. It is a smaller tree than the eastern American plant; the leaves turn as brilliantly in the autumn; the flower-buds are not killed or injured by the severest cold of our winters, and open from two to three weeks later, and the floral bracts which surround the clusters of small flowers and are the conspicuous feature of the inflorescence are narrower, further apart and pointed, not broad and rounded, at the apex. The fruit is even handsomer than that of the American plant for the individual fruits are united into a globose scarlet head which is raised on a long slender erect stem and are not, like those of the American plant, in clusters of separate fruits. The form discovered and introduced by Wilson from western China promises to be even a better plant in this climate than the Japanese form, for it appears to be equally hardy, and the floral bracts are larger and overlap below the middle, forming a cup like those of the American species. This plant is still rare, but as it produces good crops of seeds in the Arboretum it is to be hoped that it will soon be within the reach of lovers of handsome hardy trees.

The Sassafras. There is now no more beautiful tree on the margins of New England woods and by New England roadsides than the Sassafras, as the leaves have turned or are turning orange or yellow or less tinged with red. The autumn colors of several trees are more brilliant but none of them equal the Sassafras in the warmth and delicacy of their autumn dress. The Sassafras is a handsome tree at other seasons of the year. In winter it is conspicuous by its deeply furrowed, dark cinnamon-gray bark and slender light green branchlets; in early spring before the leaves appear it is covered with innumerable clusters of small bright yellow flowers which make it at that season a conspicuous and delightful object. The leaves are thick, dark green and lustrous above, paler below, and vary remarkably in shape as they are sometimes deeply three-lobed at the apex and sometimes entire without a trace of lobes. The fruit is a bright blue berry sur-
rounded at the base by the much enlarged and thickened scarlet calyx of the flower and is raised on a long bright red stalk. No other northern tree produces such brilliantly colored fruits. Unfortunately there is little time to enjoy it for the birds eagerly seek it as it ripens. The living wood of the Sassafras is not attacked by borers and the leaves are not destroyed and are rarely disfigured by insects. The thick spongy roots of the Sassafras produce suckers freely and these with a little care can be safely transplanted. How many persons now plant the Sassafras and in what American nursery can it be found? It was, however, one of the first North American trees carried to Europe as it was established in England some time before the middle of the seventeenth century. Until 1879 when another species, *S. tsumu*, was discovered in central China, the American tree was believed to be the only Sassafras. The Chinese tree has been introduced into the Arboretum but unfortunately it has not proved hardy here.

**Buckeyes**, as the American Horsechestnuts (*Aesculus*) and their numerous hybrids are usually called, are beautiful flowering trees and shrubs with yellow, scarlet or red and yellow flowers, but it is not perhaps generally realized that the color of their foliage in autumn often makes them as beautiful at this season of the year as they are when in flower. The autumn foliage is usually orange color but often orange and red, and rarely scarlet. The leaves of some of these plants in the Arboretum have already turned color and fallen; those of others are just beginning to turn from green to yellow, and others are still green. The first of these plants to assume autumn colors this year was the form of the Ohio Buckeye with leaves usually composed of seven leaflets (*Aesculus glabra var. Buckleyi*). From the group of trees of this variety the leaves had nearly all fallen two weeks ago. This variety grows chiefly in northern Missouri. On the variety of this tree from southern Missouri and Arkansas, distinguished chiefly by its pale smooth bark (*Aesculus glabra var. leucodermis*), only a few of the leaves are beginning to change from green to yellow. The most remarkable Buckeye, however, in the Arboretum this year has been one of the two plants of *Aesculus glabra* growing on the left hand side of the South Street entrance. These are the oldest Buckeyes in the Arboretum and were raised here from seeds collected in 1873 at Mt. Victory, Ohio. Of these two trees every leaf on the one nearest the wall was about the middle of September bright clear scarlet; and it is doubtful if any plant in the Arboretum has ever made a more brilliant autumn display. The leaves on the companion plant turned a few days later green and red. The leaves of self sown seedlings of these trees were on the first of October green or green beginning to change to yellow. The leaves of another Buckeye, *Aesculus arguta*, the little shrub from Oklahoma and Texas, turn early bright orange color and have already nearly all fallen. This handsome plant is related to the Ohio Buckeye in its prickly fruit but differs from it in its leaves with nine narrower longer-pointed leaflets, more elongated flower-clusters and dwarf habit. The leaves of the yellow-flowered tree Buckeye of the Appalachian Mountain slopes, *Aesculus octandra* and its variety *vestita*, turn yellow as do those of the summer flowering shrub *Aesculus parviflora*, the best known of all the Buckeyes in American gardens.
Fruits. On the whole it is not a good year for fruits in the Arboretum. Many Asiatic Crabapples are without fruit, and when there is fruit on these plants the crop is a small one. Many Viburnums, too, are without fruit. Many of the Barberries and Cotoneasters, however, are now covered with ripe or ripening fruits, and on the Hawthorns (Crataegus), more plants are covered with fruit than in any year since the collection of several hundred species was established.

**Ilex geniculata.** This rare Japanese Holly is as usual an object of beauty and interest in the Arboretum at this season of the year. It is a rather narrow shrub from three to four feet high, with small dark green leaves, and the small unisexual yellowish green flowers peculiar to most Hollies, and its beauty is found only in the small bright scarlet lustrous fruits which hang gracefully on their slender stems from three-quarters of an inch to an inch in length. This plant, which seems to be still almost entirely unknown in American and European gardens, was sent in 1904 from the Botanic Garden in Tokyo, and the following year Mr. J. G. Jack brought seeds home from Japan: seeds, too, were later collected by Mr. Wilson in Japan. It has been producing fruit here during the last seventeen years. It is a shrub well worth a place in any garden, and as the fruit continues to hang on the branches late into the winter without much change of color this will prove more valuable in winter bouquets and the winter decoration of homes than the better known Japanese *Ilex serrata*, quantities of the fruit-covered branches of which are sold in the streets of Japanese cities every autumn. This is a taller and much more common shrub than *Ilex geniculata*, and has been established for many years in the Arboretum where the male and female plants are on the upper side of Hickory Path near Centre Street. These red-fruited shrubby Hollies are commonly represented in the flora of eastern North America by two species, *Ilex verticillata*, the so-called Black Alder, and the less common but handsomer *Ilex laevigata*. These are large and shapely, fast-growing, hardy shrubs with larger but rather less lustrous fruit than the Japanese species. Of the two American species *Ilex laevigata* flowers and ripens its fruit the earlier; the flowers of the male plant are raised on long stalks; the fruit is rather larger and the leaves are of a darker green. *Ilex laevigata* is not a common plant in cultivation. The fruit-covered branches of the two species are well suited for the winter decoration of rooms, and those of *Ilex verticillata* are now occasionally seen in the shops of city florists.

**Evonymus planipes** is one of the shrubs which should be mentioned at least once every year in these Bulletins until it becomes common in American gardens. It is a native of northern Japan, with large dark green leaves, and large crimson fruits hanging gracefully on long slender stems and more showy and beautiful than those of any other Burning Bush which has ever produced fruit in this Arboretum.