Autumn Foliage. Although the leaves of several trees which assume brilliant autumn colors have been injured by severe winds, rain, and even by an unseasonable snow storm, and have fallen prematurely this autumn, like those of the Red Maple (Acer rubrum), the Sugar Maple (Acer saccharum), the Kentucky Coffee-tree (Gymnocladus), many of the Cherry and Plum-trees, the Sassafras, most of the Poplars, Phellodendron amurense, Cercidiphyllum japonicum, the Walnuts and some of the Hickories, there is now probably more brilliant color in the Arboretum than there has been earlier or than there will be later, for the leaves on many of the Oaks, of which the forests and many plantations in eastern Massachusetts are largely composed, the American Beech-trees, the Tulip-tree (Liriodendron), a few Maples, the Hornbeams (Carpinus), Hop Hornbeam (Ostrya), and of the Sorrel-tree (Oxydendrum), are still brilliant in color. The autumn leaves of the Scarlet Oak (Quercus coccinea), the White Oak (Quercus alba), of a dwarf Oak (Quercus ilicifolia), and of the Red Oak (Quercus borealis maxima) make the greatest show in the Arboretum. Those of the Scarlet Oak are the deepest red or scarlet of any of the American Oak-trees. This tree is not a native of the Arboretum and is not common in the neighborhood of Boston, but a little further south and generally in the Cape region it is a common tree. There are not, unfortunately, many specimens in the Arboretum, and the best of them are among the trees on the lower side of the road near the top of Peter's Hill. The Scarlet Oak deserves to be better known to the planters of trees and to be more generally used by them. Nurserymen too often sell the Pin Oak (Quercus palustris), an inferior tree in the color of its autumn
foliage, when the Scarlet Oak is ordered. The leaves of the White Oak turn late to various shades of red, and are brilliant in favorable seasons during at least two or three weeks. The great beauty at this season of the year of *Quercus ilicifolia*, which is usually a tall shrub rather than a tree, is that with its bright lustrous leaves it often thickly covers sandy barrens and rocky hillsides near the coast from southern Maine southward, and is especially abundant on Cape Cod and its islands in situations where few other trees can grow. It grows well in the Arboretum and can be seen to advantage on the left hand side of the Valley Road beyond the group of native Swamp White Oaks (*Quercus bicolor*). The lustrous leaves of the Red Oak (*Quercus borealis maxima*) turn late to various shades of brown or red and retain their beauty for a long time. This large and fast-growing tree is the Oak which has been chiefly planted along the Boston and Brookline parkways and in the Boston parks, and has generally grown better in western and northern Europe than other American Oaks. On Peter's Hill, among the trees on the lower side of the road below the summit is an Oak tree which is not surpassed in the brilliant red color of its autumn foliage. Nothing is known of the origin or history of this tree which for years has been considered a *Quercus bicolor* with abnormally colored leaves. This year for the first time this tree has produced a few acorns, and these suggest that this handsome tree may be *Quercus Prinus* of Linnaeus, the so-called Basket or Cow Oak, a white Oak of the middle and middle western states. Nothing is known here of the autumn coloring of this tree, but if this guess as to the identity of the tree is correct it is curiously enough the only living representative in the Arboretum of one of the largest and handsomest of the Oak trees of eastern North America.

*Cornus florida*, the Flowering Dogwood of the eastern United States, more abundant southward than in Massachusetts where its flowers are sometimes injured by the cold of severe winters, has few equals among small trees for the autumn decoration of our parks and gardens. Its autumn beauty is increased by the contrast of the crimson, scarlet and green colors of the upper surface of the leaves with that of the lower surface which retains until the leaves fall the pale nearly white color of the summer. It is one of the plants on which the leaves turn early and retain their brilliant color during October, or for a longer period perhaps than any plant in the Arboretum with such early turning leaves. In regions with a winter climate as severe as that of eastern Massachusetts the eastern Asiatic relative (*Cornus kousa*) of our Flowering Dogwood is a more reliable plant. It is a smaller tree but the leaves turn brilliantly in the autumn, and the flower-buds are not killed or injured by the severe cold of our winters, and open from two to three weeks later; the floral bracts are narrower, further apart and pointed, not broad and rounded, at the apex like those of the American tree. The fruit is even handsomer 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 (*Cornus kousa var. chinensis*) promises to be even a better plant in this climate than the Japanese form and 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.

**Zelkova serrata**, the Japanese Keaki. The leaves of this tree, which are brown more or less tinged with yellow, make it conspicuous at this season of the year and remind us how little this valuable tree is known in the United States. The oldest tree in this country known to the Arboretum is growing on the estate of Mr. Henry Everett in Barnstable, Massachusetts. The seeds which produced it were brought from Japan in 1862 by John Wilson who gave them to Captain Hinckley. Only one plant was raised from these seeds. Fifteen years ago it was a broad-headed tree with a short stout trunk divided into several large spreading stems. A little later seeds of the Keaki were sent to the Parsons Nursery at Flushing either by Dr. Hall or by Mr. Thomas Hogg, and the best trees known to the Arboretum are in Dr. Hall’s plantation at Bristol, Rhode Island. The largest of these trees are now fully seventy feet high with tall stems from two to two and a half feet in diameter. For years they have produced large crops of seeds, and quantities of seedlings spring up under the trees and at long distances from them, the seeds being widely scattered by wind. A specimen with a clean trunk and shapely head which had been planted by the roadside in Warren, near Bristol, fifteen years ago indicated that the Japanese Zelkova might be successfully used as a street or roadside tree. It is as a timber tree, however, that this tree deserves the attention of Americans. It is the most important hardwood tree of Japan and Korea. The wood is tough, elastic and durable in the ground, and when exposed to the air it is considered the best wood for building in the Empire, and furnishes the great round columns which support the roofs of Japanese temples. It is universally used in Japan for making jinriki shasas, and quantities of the wood are sent from Korea into China for this purpose. It is the Keaki alone which has made the jinrikisha possible, just as the Hickory tree has made possible in this country the light wagon and the trotting horse. Great specimens of this tree can be seen in Japanese temple gardens and by the village roadsides. It is doubtful if this really noble tree, which is hardy and has grown rapidly in the Arboretum, can be found in any American nursery.

The Arboretum at this season of the year owes much to the highly colored leaves of the fragrant Sumach (*Rhus canadensis*), or as it was formerly called *R. aromaticia*. This widely distributed North American shrub seldom grows more than five feet tall, and when planted in good soil is often broader than tall with lower branches spreading flat on the ground and upper branches erect, spreading or drooping. In early spring before the leaves appear the branches are covered with clusters of small bright yellow flowers which in June are followed by dull red fruits which are mostly hidden by the small compound leaves. Among the small shrubs in the Arboretum few are more brilliant at this season of the year for the leaves turn gradually to bright scarlet and orange. It has been largely planted along some of the drives as a border for larger plants, and no plant which has been tried in the Arboretum for this purpose has proved so successful. It is a remarkable fact that this beautiful and useful shrub is not found in American Nurseries.
No shrubs are more brilliant in their red or crimson coloring at this season of the year than the Blueberries and Huckleberries of eastern North America. None certainly are more beautiful than the Highbush Blueberry so called (*Vaccinium corymbosum*) and its variety *pallidum*. These plants, too, are handsome in early spring when their white bell-shaped flowers open, and in August and September when the blue-black fruit covers the branches. A native of swamps, the Highbush Blueberry grows equally well in gravelly ground, and the best plants in the Arboretum are on Bussey Hill near the entrance to Azalea Path and opposite the overlook. The autumn color of the other Blueberries and Huckleberries is as brilliant as that of the Highbush Blueberry, and some of them, especially *Vaccinium pennsylvanicum*, are invaluable for covering the ground under Oaks and other hardwood trees. The white flowers are attractive; the bluish black berries, which are the earliest Blueberries to ripen, have a fair flavor, and during the autumn the plants make a broad mass of scarlet when only a few inches high and are more brilliant in color than those of the Heather on the Highlands of Scotland. The Japanese *Vaccinium ciliatum*, an upright growing shrub, is also covered now with bright red leaves. There is a group of these plants in the Shrub Collection, but they are seen to their best advantage on both sides of Azalea Path where nearly all the species are growing.

Many of the Viburnums are still brilliant, the most beautiful perhaps is the American *V. prunifolium* and *V. Lentago* which often grow to the size of small trees, *V. dentatum* and *V. seabrettum*, the Korean *V. Carlesii* and the two red-fruitied Japanese species *V. Wrightii* and *V. dilatatum*. It is interesting that the leaves of *V. Canbyi*, sometimes considered a variety of *V. venosum*, are still perfectly green. This native of eastern Pennsylvania, Delaware and central Indiana, is the last of the American species to flower and the leaves are still perfectly green. Specimens from twelve to fourteen feet high and broad can be seen in the Arboretum near the Administration Building and by the border of the Meadow Road.

Of leaves which turn yellow in the autumn and are still brilliant and conspicuous are those of the winter-flowering Witch Hazel (*Hamamelis vernalis*), a native of southern Missouri and adjacent regions. This shrub deserves a place in gardens for its flowers which open in January and February, and for the beauty of its late persistent leaves.

The leaves of the Elm trees when they turn at all in the autumn usually turn to shades of dull yellow. There is a remarkable exception in *Ulmus parvifolia*, a native of the Yangtze valley in China with an outlying station in southern Japan. Plants of this tree were sent in 1909 by Wilson from China to the Arboretum. They have grown well here and are perfectly hardy, and the autumn leaves of most of the trees are bright clear yellow, but on two of the trees the leaves are bright red. This tree is certainly an exception in its autumn leaves to all the Elm trees known to the Arboretum.