Conifers. The value of institutions like the Arboretum appears in the fact that several cone-bearing plants which were first cultivated in this country at this Arboretum are now generally recognized as the best plants in their different classes which can be grown in the northeastern United States. The most important of the conifers introduced by the Arboretum are Tsuga caroliniana, Picea Engelmannii, Picea Omorika, Picea Glehnii, the Colorado form of Abies concolor, the interior form of Thuja plicata, Juniperus chinensis var. Sargentii and Picea glauca var. albertiana conica.

Tsuga caroliniana, the Carolina Hemlock, as it grows in the Arboretum is generally considered the most graceful and beautiful cone-bearing tree in the collection. It is a native of the Blue Ridge, the eastern range of the Appalachian Mountains on which it grows from southwestern Virginia to northern Georgia usually in scattered groves on the rocky banks of streams usually at elevations between two thousand five hundred and three thousand feet. It escaped the attention of the numerous botanists who explored the southern Appalachian Mountains during the last half of the eighteenth and the first half of the nineteenth century, and its distinct character was first noticed in 1850 by Dr. L. B. Gibbes of Charleston, S. C., although it was not until thirty-one years later that it was described by Dr. Engelman. This Hemlock was first raised at the Arboretum in 1880 and the tallest tree here is now nearly forty feet high. On the Blue Ridge the Carolina Hemlock is usually not more than forty or fifty feet high, although occasionally trees up to seventy feet in height occur, and the trunk
has rarely a greater diameter than two feet. It is a much smaller tree therefore than the northern Hemlock. The branches are more pendulous and the leaves are darker green and more lustrous than those of this tree. The leaves, too, are usually notched at the apex and slightly toothed, while those of the northern tree are usually rounded at the apex and are not toothed. The two trees are, however, best distinguished by their cones; those of the southern tree are not stalked and their scales are much longer than broad with obtusely pointed bracts; and those of the northern trees are stalked and the scales are about as long as wide with bracts broad and truncate at the apex. Many persons see and admire the Carolina Hemlock in the Arboretum every year, but it is still rare in cultivation, and probably ten thousand Colorado Blue Spruces (Picea pungens) are planted in this country every year for one Carolina Hemlock. It is not found in many American nurseries, and the price at which it is offered is excessive.

Picea Engelmanii, which is the common and most widely distributed Spruce of the Rocky Mountains, was discovered in Colorado in 1862 by D. C. C. Parry. Seeds are said to have been sent by him in that year to the Harvard Botanic Garden, but there is no record that plants were raised there; and it is believed that this tree was first cultivated in 1879 when seeds were planted in this Arboretum. The Engelmann Spruce grows to its largest size on the mountains of Colorado where trees one hundred and fifty feet high with trunks up to five feet in diameter have been seen; further north and south the trees are smaller. As it grew in great forests which fifty years ago covered the slopes of the Colorado mountains up to altitudes of ten thousand feet it was with its light cinnamon red bark and narrow pyramidal crown of soft light gray-green leaves one of the handsomest, perhaps the handsomest of all Spruce-trees. The Engelmann Spruce has grown well in the Arboretum, and the tallest trees here are nearly forty feet high. For many years the stems were clothed with branches to the ground, but four or five years ago the lower branches began to die and the trunks of the largest trees are now naked for a distance of seven or eight feet from the ground. The narrow crowns are still perfectly healthy and the trees are growing rapidly. Engelmann's Spruce is a good ornamental tree to plant in New England, and its hardiness, the rapidity of its growth, and the value of the timber it produces may make it a valuable tree for forest planting in the northeastern states. In western Europe, where Engelmann's Spruce suffers from spring frosts, it is little known, which is perhaps the reason that it has been so little planted in the eastern states for Americans have been often too much governed in the selection of trees by what is known of them in England. From all points of view Picea Engelmanii is now the best Spruce which has been planted in the Arboretum.

Picea Omorika, the Servian Spruce which was not distinguished until 1875, was first raised at the Arboretum in 1880 from seeds presented to it by the late Dr. Bolle of Berlin. The Arboretum trees are now from thirty to forty feet high, with trunks clothed to the ground with short branches which form a narrow pyramid clothed with leaves dark green and lustrous on the ventral surface and pale on the other. This Spruce has proved perfectly hardy here and is one of the handsomest
conifers in the whole collection in which there are fortunately several
individuals. The only objection to this tree is that it often loses its
leader by the attacks of the borer which so often destroys that of the
native White Pine. In southeastern Europe, where the Servian Spruce
is widely distributed and forms great forests, it is an important timber
tree, growing up to a height of one hundred and thirty feet, with a
girth of trunk of not more than four feet.

_Picea Glehnii_ is a native of northern Japan and Sakhalin where it
was discovered by a Russian botanist in 1861. Seeds of this tree are
said to have reached Europe in 1871; those of the Japanese tree were
planted in the Arboretum in 1892. It is of course too soon to speak
with much authority about the value of this tree in eastern America.
The Arboretum trees have grown rapidly, are perfectly hardy, and are
certainly the most satisfactory here of the Japanese Spruces. Judging
by the latitude of its native home, this Spruce should prove hardy far
north in eastern America.

_Abies concolor_, the Rocky Mountain form of the White Fir of west-
ern America, was first raised in the Arboretum in 1874 from seeds col-
lected by Dr. Engelmann on the Spanish Peaks of southern Colorado.
It is said that a few seeds of this tree reached Europe from New Mex-
ico two years earlier, but the statement needs confirmation. There
are good specimens in the Arboretum raised from Dr. Engelmann’s
seeds nearly sixty feet high and with trunks still clothed with branches
to the ground, and this Colorado tree must with our present knowledge
be considered the best Fir-tree which can be grown in the north-eastern
states. Its only rival here is the Japanese _Abies homolepis_ which was
introduced into the United States in the early sixties through the Par-
sons Nursery, but has only recently been appreciated and is still rare
in American collections. _Abies concolor_ is now one of the most gener-
ally planted conifers in the eastern states.

_Thuya plicata_, the Red Cedar of the northwest, is one of the great
trees of the world, often growing in western Oregon and Washington
to a height of two hundred feet with a trunk fifteen feet in diameter.
Plants raised from seeds gathered in the coast region have never proved
hardy in the eastern states, but fortunately this tree — of less gigantic
size— ranges eastward to the eastern slope of the continental divide
in Montana, and in 1880 seeds collected near Fort Coeur d’Alene in
Idaho by Dr. Sereno Watson were planted at the Arboretum. The
plants raised from these seeds have grown rapidly and have proved
perfectly hardy, and are now the handsomest trees of their class in
the collection. Like other Arbor Vitae this tree is easily propagated
by cuttings and a few American nurserymen are beginning to appre-
ciate its beauty and value. One of the valuable timber trees of North
America, this tree now promises to play its part in the decoration of
eastern parks and gardens.

_Juniperus chinensis_ var. _Sargentii_ is generally considered the hand-
somest of the numerous Junipers with prostrate stems which are now
known in gardens. It was first raised at the Arboretum in 1893 from
seeds collected the previous year by Professor Sargent in Japan. The original plants here are now dense mats of bright green foliage ten feet across and only a few inches high.

**Picea glauca var. albertiana conica.** The original plant of this little Spruce was found in 1904 near Banff in Alberta by Professor Jack and the largest plants now in cultivation are only about three feet tall. No other dwarf Spruce is so pyramidal in habit and so dense in foliage, and Professor Jack’s introduction proves to be one of the most interesting and distinct of all the dwarf conifers. Much attention has been paid to it in England during the last two or three years and it is now found in a few American nurseries.

**Callicarpa japonica.** The so-called French Mulberry, *Callicarpa americana*, in late autumn and early winter when it is covered with its violet colored fruit is one of the handsomest shrubs of the southern states where it is common and attracts the attention and curiosity of northern travelers. The French Mulberry unfortunately is not hardy in New England, but it can be well replaced here by a Japanese and Korean member of the genus, *Callicarpa japonica*. This shrub was first cultivated in the Parsons’ Nursery at Flushing, Long Island, sixty years ago. It soon disappeared from American gardens but was raised at the Arboretum in 1887 and has now been well established here for many years. It is a smaller shrub than the American species with smaller leaves and smaller, rather lighter-colored, lustrous violet fruit. The Korean form of this plant, which has been growing in the Arboretum since 1904, is a more vigorous plant with rather larger fruit. This autumn the fruit has been unusually abundant and the Korean Callicarpa has been one of the most beautiful objects in the Arboretum. The attention of lovers of hardy shrubs is again called to the beauty and value of this plant. Other Asiatic species in the collection are the Japanese and Korean *Callicarpa dichotoma* and the west China *C. Geraldii*. The latter is not very hardy and has not produced fruit here yet, and *C. dichotoma*, which is hardy, ripens its fruit very late and as an ornamental plant is inferior to *C. japonica*. These Callicarpas are arranged in a group on the upper side of Azalea Path close to its entrance from the Bussey Hill Road.

**Ilex serrata.** The two so-called Black Alders of the United States, *Ilex verticillata* and *Ilex laevigata*, have not before in the Arboretum been more thickly covered with their bright red fruit which remains on the branches long after the leaves have fallen and makes them conspicuous objects during the last two months of the year. Although smaller than that of the American species, the fruit of the Japanese *Ilex serrata* is more lustrous and even more beautiful. This is a narrow and more slender shrub than the American Black Alders which in Japan is common and widely distributed, and grows to the height of twelve or fifteen feet. It is hardy in the Arboretum where it has been growing for many years by Hickory Path near Centre Street, and where the plants are now covered with fruit which will remain on the branches until the leaves unfold in the spring.

These Bulletins will now be discontinued until next spring.