Ash-trees. Judging by the number of inquiries sent to the Arboretum about these trees there is so much interest in them that we reprint the following article on the subject which appeared in one of these Bulletins several years ago:

Fraxinus is the name of the genus to which all Ash-trees belong, although it may be well to say that the trees called Mountain Ashes are not Ashes but belong to the genus Sorbus, a member of the Rose Family and closely related to the Pears, Apples and Chokeberries. Ash-trees occur in nearly every temperate part of the Northern Hemisphere, but are more abundant in species in eastern North America than in other parts of the world. Ash-trees fall naturally into two groups; the flowers of those of the first group are furnished with narrow white petals (Ornus) and the flowers of those in the second group are destitute of petals. The best known tree of the first group is the little tree called Manna Ash or Flowering Ash (Fraxinus Ornus), a native of southeastern Europe which has long been an inhabitant of the gardens of western Europe. It grows well in the middle Atlantic states, but has never been a success in the Arboretum where a tree which had flowered in 1917 was killed to the ground by the extreme cold of the following winter. Three of the flowering Ashes are natives of the United States, Fraxinus cuspidata, F. Gregii of the Mexican boundary region and F. dipetala of the mountain valleys of California. These three plants are not in the Arboretum collection where they would not be hardy, but Ornus is well represented here by two eastern Asiatic species, F. Bungeana, a small shrub from northern China which
was first raised here in 1882, and by the Japanese *Fraxinus longicuspis*
which grows in the Arboretum both as a shrub with several spreading
stems and as a small tree. Of the Ash-trees without petals and there-
fore with inconspicuous flowers there are seventeen species with a
number of more or less distinct varieties which are natives of the United
States. Six of these trees grow in the northeastern part of the country
and three of them are common New England trees. To these trees
color names have for no obvious reason been given, at least in books, for
it is doubtful if these names have any general application among per-
sons whose knowledge of trees has come from an intimacy of associa-
tion with them in the forest or by the roadside, and not from the study
of other persons' ideas about them recorded in printed pages. To per-
sons who know trees from books White Ash, Black Ash, Green Ash,
Red Ash and Blue Ash are familiar names. The most valuable of the
American Ashes as a timber tree and one of the handsomest of the
whole genus, the so-called White Ash, *F. americana*, grows naturally
from Nova Scotia to Florida and eastern Texas, and westward to
Nebraska and Oklahoma. It is a splendid tree, and when conditions
of soil and rainfall favor it, grows often more than one hundred feet
high with a tall massive trunk five or six feet in diameter. If anyone
in northeastern North America wants an Ash-tree for shade or to pro-
duce timber, *Fraxinus americana* is the tree to plant. It grows, too,
better in western Europe than most eastern American trees, although
it will probably not become as good a tree there as the native Ash.
A variety of *Fraxinus americana* (var. *crassifolia*) differs from the
common form in its thicker, entire or only slightly toothed leaflets
which are silvery white on the lower surface. This tree was raised at
the Arboretum in 1874 from seeds collected at Mt. Victory in central
Ohio. It is therefore now one of the oldest trees raised here. This
Ohio tree has grown more rapidly and is handsomer than any other
Ash-tree which has been planted in the Arboretum. Seeds of this tree
usually reproduce the variety, and it is this variety which should be
planted when the best possible Ash-tree is wanted in this part of the
country. The Black Ash, *Fraxinus nigra*, grows as far north as New-
foundland and the shores of Lake Winnipeg, that is further north
than the other American Ash-trees, and is a common New England
tree. It grows naturally in deep cold swamps and on the low banks
of lakes and streams, and long resisted every effort made to establish
it in the Arboretum until Mr. Dawson tried the experiment of grafting
it on roots of the White Ash. These grafted plants although still
small are growing well in peat soil on the left hand side of the Meadow
Road near the Rhamnus Collection. *Fraxinus pennsylvanica*, the so-
called Red Ash, is another tree widely distributed over the eastern part
of the continent from New Brunswick and southern Dakota southward.
It is a smaller tree than the White Ash, rarely growing more than
fifty or sixty feet tall, with a trunk less than two feet in diameter, a
narrow head of thin foliage, and branchlets covered with pubescence.
The inner surface of the bark of this tree is sometimes red when first
cut; the wood is about as valuable as that of the White Ash, but for
shade and ornament *F. pennsylvanica* is not worth planting. The Green
Ash is now usually considered a variety of *F. pennsylvanica* (var. *lan-
ceolata*), and is most abundant in the valley of the Mississippi River
and westward. It is easily distinguished by the bright green color of the two surfaces of the usually narrow leaflets. Seeds of the Green Ash germinate easily and quantities of seedling plants are found on the sand-bars and banks of many western rivers. It is a popular tree, therefore, in western nurseries, and, although not suited for the purpose, has been largely planted in the west as a street and shade tree, and occasionally also in the east for American nurseries have often substituted it for the White Ash. Another Ash of the Mississippi Valley, the Blue Ash of popular tree books, *Fraxinus quadrangulata*, owes its scientific name to its four-angled branchlets. This is one of the noble trees of the American forest, almost rivalling the White Ash in size. It grows naturally in limestone soil, but it has grown well in the Arboretum where it is helped by occasional applications of lime.

Two southern trees related to the White Ash, *Fraxinus biltmoreana*, with densely pubescent branchlets, of the southern Appalachian region and westward, and *F. texensis* with rounded leaflets and a native of central and western Texas, are established in the Arboretum. Three species of the southeastern states and the five species of New Mexico and Arizona will probably never live long in Massachusetts, although the curious little *Fraxinus anomala* with square branchlets and leaves usually reduced to a single leaflet at one time flourished in the Arboretum during several years. *Fraxinus oregana*, the Pacific coast Ash-tree, is a large and handsome tree and one of the few valuable deciduous-leaved timber trees of the northwest. It has proved hardy in the Arboretum where it grows well but where it will probably never become a large tree.

Of the Old World Ash-trees the best known is *Fraxinus excelsior*, one of the important timber trees of the world, and as it grows in western and central Europe often a magnificent tree sometimes nearly one hundred and fifty feet high with a tall massive trunk three or four feet in diameter. A number of abnormal forms of this tree have appeared in European nurseries and plantations, but *F. excelsior* and its varieties are miserable trees in New England and should not be planted here. *Fraxinus rotundifolia* and its variety with pendulous branches are established in the Arboretum. They are small trees, natives of southern Europe and southwestern Asia, and although interesting from the botanists' point of view add little to the beauty of a collection of trees. An Ash-tree from Turkestan and Soongaria (*F. potamophylla*) was raised in the Arboretum in 1878 and has grown rapidly into a handsome, shapely and hardy tree. As an ornamental tree this is the most promising of the exotic Ashes which have been planted in the Arboretum. They are small trees, natives of southern Europe and southwestern Asia, and although interesting from the botanists' point of view add little to the beauty of a collection of trees. An Ash-tree from Turkestan and Soongaria (*F. potamophylla*) was raised in the Arboretum in 1878 and has grown rapidly into a handsome, shapely and hardy tree. As an ornamental tree this is the most promising of the exotic Ashes which have been planted in the Arboretum. The great Ash-tree of northeastern Asia, *Fraxinus mandshurica*, inhabits eastern Siberia, Manchuria, Korea, and northern Japan. It is a really splendid tree and produces wood of exceptional quality. This tree was first raised in the Arboretum in 1878. It is hardy and grows well for a few years but soon begins to fail and becomes unsightly, and no place has yet been found in the Arboretum which suits it. In 1882 the Arboretum received seeds from Peking of *Fraxinus chinensis* var. *rhyncophylla*; it has grown well and has now flowered and produced fertile seeds for several years. It is a small and not particularly shapely tree, and is most interesting in winter, for the buds are unlike those of other Ash-trees and are globose, half an inch
in diameter with broad scales covered with a thick coat of rufous tomentosum. The outer scales, which are smaller than the others, do not as in most Ash-trees cover the bud which is enclosed by the second pair of scales; and on the terminal bud these outer scales are reduced to thickened reflex tips which stand out like ears. Several Ash-trees discovered by Wilson in western China have been raised in the Aboretum and are now growing in its nurseries. Of these *Fraxinus platypoda* has grown the most rapidly, but it is too soon to form an idea of the value of these trees in American plantations.

Ash-trees require deep, moist soil and as they usually unfold their leaves late and lose them early in the autumn they are not good trees to plant to shade streets and sidewalks. They are often injured while young by borers, and they are all liable to suffer from the attacks of the oyster-shell scale.

**Acanthopanax ricinifolius.** This inhabitant of Japan and Korea sometimes grows to the height of seventy or eighty feet and forms a massive trunk with great wide-spreading branches armed, like the stems of young trees, with numerous stout prickles. To the shape of the leaves, which somewhat resemble those of the plant which produces the fruit from which castor oil is obtained, this *Acanthopanax* owes its specific name. The leaves, which are nearly circular and more or less deeply five- or seven-lobed, and fifteen or sixteen inches in diameter, hang on long slender stalks. The small white flowers are arranged in compact long-stemmed clusters which form a compound flat terminal panicle which varies from twelve to eighteen inches in diameter and is well raised above the leaves. In the early autumn the flowers are followed by small black and shining fruits. Of the trees growing in the Arboretum this *Acanthopanax* most departs in appearance from the trees of New England; and no other tree here is regarded with more curiosity. The largest specimen is growing by the side of the pond on the right hand side of the Meadow Road near its junction with the Bussey Hill Road; there is another large specimen in the mixed border plantation in the rear of the group of Viburnums near the junction of the Bussey Hill and Valley Roads.

**Rhus javanica,** an eastern Asiatic Sumach which is perhaps better known as *Rhus Osbeckii* or *R. semialata,* is a good August flowering tree in New England. In this country it is rarely twenty feet high, with spreading branches which form a broad round-topped head of handsome, light green, pinnate leaves with a broad-winged petiole and rachis. The flowers are white in erect, long-branched, pyramidal clusters, ten or twelve inches long and standing well above the leaves. The fruit is globose, about a quarter of an inch in diameter, red, and in compact clusters. The leaves of few trees or shrubs turn in the autumn to a more brilliant scarlet. For its showy August inflorescence and the splendor of its autumn foliage this Sumach should find a place in the planting lists for northern gardens.