Summer-flowering Trees. Several trees flower in summer here and add to the interest of the Arboretum at a season of the year when there are comparatively few flowers or ripe fruits to be seen. The most important of these trees are the Lindens, a genus of many species, the earliest of which begins to bloom about the middle of June and the last five or six weeks later. In the Bulletins published on June 10, 1910, and on July 6th of last year a detailed account of these trees appeared to which persons interested in them are referred; and it is only necessary, perhaps, to say now that Lindens grow best in damp, moist, well-drained soil, and that the European species take more kindly to cultivation in this part of the country than the American or Asiatic species, the handsomest Linden trees planted in the neighborhood of Boston being forms of the natural European hybrid to which the name *Tilia vulgaris* belongs. There is a large collection of Lindens in the Arboretum arranged in the meadow on the right-hand side of the Meadow Road in which can now be seen specimens of most of the species and of several forms and varieties, many of the trees being now large enough to flower. The fact that, with the exception of *Tilia japonica* which is the first Linden here to unfold its leaves, none of the Asiatic Lindens now promise to be large or useful trees in this climate is surprising for the trees of eastern Asia usually flourish here, and as a rule are better able to adapt themselves to New England conditions than allied European trees. It is always possible, however, that by crossing some of the Asiatic species with the European species new and valuable forms may be obtained, for hybrids between American and European Lindens, like *Tilia spectabi-
Zis and its variety Moltkei, are trees of great beauty and remarkable rapidity of growth.

Catalpas. Of trees which flower here in summer the Catalpas have the showiest flowers. All the species and one or two hybrids with the exception of the West Indian C. longissima are in the collection, although they are not large enough yet to flower here. The first Catalpa to attract attention, C. bignonioides, was cultivated early in the eighteenth century in England where it had been sent from South Carolina. About forty years ago it became known that a second species of Catalpa was growing naturally in the lower Ohio valley and southward along the Mississippi River as far as western Tennessee and northeastern Arkansas. It was found that this second Catalpa had larger flowers in fewer-flowered clusters than the more southern tree, that the inner surface of the corolla of the flowers had fewer and smaller spots than that of the other tree; that the pods containing the seeds were stouter and had thicker walls, and that the leaves were much longer-pointed at the apex. The name of C. speciosa was given to this tree, and as Catalpa wood is extremely durable when placed in the ground it has been largely planted, especially in some of the prairie states, to produce fence-posts for which it is admirably suited, and for railway ties for which it is too soft. Catalpa speciosa is a fast-growing and rather pyramidal tree which on the rich river bottom lands of the Mississippi sometimes rises to the height of one hundred and twenty feet and forms a tall trunk occasionally four and a half feet in diameter. In New England it is a fast-growing, more shapely and much harder tree than C. bignonioides which blooms two or three weeks later. In the northern states, and probably in all parts of the country, the early-flowering C. speciosa is the Catalpa which is now commonly planted. There is a dwarf form, var. nana, of C. bignonioides which is usually known as C. Bungei in American nurseries where it is grafted as a standard on the stems of one of the tree Catalpas, and is popular at present for the supposed decoration of gardens which are more or less formal in character and pass in this country for “Italian gardens.” It is not known at the Arboretum where this dwarf variety originated or that it has ever flowered. The name Catalpa Bungei properly belongs to the tree of northern China with narrow, dark green, long-pointed leaves, small yellowish white flowers and slender pods. This is not so handsome a tree as the American Catalpas but it is geographically interesting, and is perfectly hardy in the Arboretum where it is growing well. It has not yet flowered. Another Chinese species, C. ovata, sometimes called C. Kaempferi, is much cultivated in Japan whence it was sent to this country many years ago. It is a perfectly hardy little tree with comparatively small dark green leaves, many-flowered clusters of small yellowish spotted flowers and long slender pods. This Catalpa, which will thrive in regions too cold for the American species, has been somewhat planted in the United States, although as an ornamental tree it does not deserve much attention from the lovers of handsome trees. A hybrid (C. hybrida) between C. bignonioides and C. ovata appeared several years ago in the nursery of J. C. Teas at Baysville, Indiana. This is a fast-growing and hardy tree with flowers like those of its American par-
ent, although rather smaller, and arranged in much longer clusters, while the leaves, although larger, resemble in shape those of *C. ovata*. This handsome tree has also been called *Catalpa Teasii*, *C. Teasiana* and Teas’ Hybrid Catalpa. Another hybrid of the same parentage has purple leaves and, although it probably originated in a European nursery, has been called var. *japonica*. The two Catalpas introduced by Wilson from central and western China, *C. Fargesii* and *C. Duclouxii*, live in the Arboretum but do not yet give much promise that they will become valuable additions to the list of summer-flowering trees which can be successfully grown in this climate.

The *Aralia* Family furnishes the Arboretum with three handsome trees which flower in late summer or early autumn. They are *Acanthopanax rivicinfolium*, *Aralia spinosa* and *A. chinensis* and its varieties. The Acanthopanax is a tree which is common in the forests of northern Japan where it is often seventy or eighty feet high with a massive trunk and great wide-spreading branches armed, like the stems of young trees, with many stout prickles. The leaves hang down on long stalks and are nearly circular, five- or seven-lobed and often fifteen or sixteen inches in diameter. The small white flowers are produced in compact, long-stalked clusters which form a flat, compound, terminal panicle from twelve to eighteen inches across and are followed late in the autumn by shining black fruits which do not fall until after the beginning of winter. This tree is perfectly hardy in the Arboretum where it has been growing for twenty-four years and where it has flowered and ripened its seeds now for several seasons. It is one of the most interesting trees in the collection and, because it is so unlike other trees of the northern hemisphere, it is often said to resemble a tree of the tropics. *Aralia spinosa*, the so-called Hercules’ Club of the southern states where it is a common inhabitant of the borders of woods and the banks of streams, is a tree often thirty feet high with a tall trunk and wide-spreading branches covered with stout orange-colored prickles. The leaves, which are borne at the ends of the branches, are long-stalked, twice pinnate, and from three to four feet long and two and one-half feet wide. The small white flowers are arranged in compound clusters which rise singly or two or three together above the leaves and are three or four feet long. The fruit is black, rather less than a quarter of an inch in diameter, and ripens in early autumn. For several years this tree did not prove hardy in the Arboretum, but it is now well established on the slope at the northern base of Hemlock Hill in the rear of the Laurel plantation and is now spreading rapidly there over a considerable area by shoots from underground stems. The Asiatic tree *Aralia* resembles in habit and general appearance the American Hercules’ Club, but is distinct from that tree in the absence of stalks to the leaflets. There are a number of geographical forms of this tree; the one which is most commonly cultivated in this country is a native of Manchuria and eastern Siberia (var. *mandshurica*) which is sometimes found in nurseries under the name of *Dimorphanthus mandshuricus*. The Japanese form, var. *glabrescens*, is chiefly distinguished from it by the pale color of the under surface of the leaflets; it is less hardy than the Manchurian form and is not often seen in this country.
Sophora japonica is in spite of its name a Chinese tree which has been cultivated in Japan for more than a thousand years, and as it first reached Europe from that country was long considered a native of Japan. It is a round-headed tree which in Peking, where it has been much planted, has grown to a large size and looks from a distance like an Oak-tree. The leaves and branchlets are dark green, and the small, creamy white, pea-shaped flowers, which open here in August, are produced in great numbers in narrow, erect, terminal clusters. There are also in the collection the form with long pendent branches (var. pendula) which rarely flowers, and a young plant of the form with erect branches (var. pyramidalis). The form of this tree with flowers tinged with rose color (var. rosea) is not in the Arboretum. The Sophoras are on the right-hand side of the Bussey Hill Road, opposite the upper end of the Lilac Group. Near them the Maackias are growing. They also belong to the Pea Family, and the better known Maackia amurensis is a native of eastern Siberia; it is a small tree with handsome smooth, reddish brown, shining bark, dull, deep green, pinnate leaves and short, narrow, erect spikes of small white flowers which open here soon after the middle of July. There is a form of this tree (var. Buergeri in northern Japan which differs from the Siberian tree in the presence of soft down on the lower surface of the leaflets. The species discovered by Wilson in central China, M. hupehensis, is growing well in the Arboretum but has not yet flowered.

Oxydendrum arboreum, the Sorrel-tree or Sour Wood, is a native of the southern Appalachian mountain forests and the only tree of the Heath Family which can be grown in this climate, with the exception of the Laurel (Kalmia latifolia) and the Rose Bay (Rhododendron maximum) which are shrubs at the north and only exceptionally trees in a few favored valleys of the southern mountains. The Sorrel-tree in its native forests grows fifty or sixty feet high, but at the north as it begins to flower abundantly when only a few feet tall, it is not probable that in this climate it will ever attain a considerable size. It is well worth growing, however, for its bright green shining leaves which have a pleasant acidulous flavor and in autumn turn bright scarlet, for its white Andromeda-like flowers erect on the branches of spreading or slightly drooping terminal clusters, and for its pale fruits which in the autumn are conspicuous among the brilliant leaves. There is a group of these plants among the Laurels at the northern base of Hemlock Hill which will flower at the end of July or early in August.

Koelreuteria paniculata. This Chinese tree will also flower before the end of July when it will be conspicuous from its large erect clusters of bright yellow flowers which stand well above the large, dark green, compound leaves and which are followed by large, bladder-like fruits. This is a small hardy tree which is now often planted in this country, especially in the middle states.

These Bulletins will now be discontinued until the autumn.