Some Early Flowering Trees. The flowers of many of our earliest blossoming trees are unrecognized by a great proportion of the people who enjoy their beauty of foliage or shade. Inconspicuous flowers may be followed by more or less noticeable or showy fruits but these, too, sometimes attract little notice.

While we have Witch-Hazels earlier, the first of the large trees, native or foreign, to blossom in New England is our White or Silver Maple (Acer saccharinum). Normally flowering about the middle of March, in the past exceptionally mild winter the first flowers were found fully open on January 14th on a large low-branched tree in the Arboretum. This tree has been watched and noted in the early spring for a good many years and its flowers always appear more precocious than those of other trees of the same species in the vicinity. Not all of the flowers appear at the same time, some remain in bud during a cold period succeeding the opening of the first flowers and develop the rest of their flowers several weeks later. Because of freezing, the earliest may not produce fruits but some of the later blooms may do so. In this latitude the fruit usually ripens in the last days of May or the first days of June. We have records of ripe fruit on May 18th.

The Maple most nearly associated, botanically, with the native Silver Maple is our Red or Scarlet Maple (Acer rubrum). This usually does not blossom until about the middle of April when its honey-yellow or scarlet flowers cause the trees to have a much more conspicuous aspect than is ever shown by the White Maple. The fruits of the Red Maple are often as conspicuous as the flowers and mature with those of the White Maple. They are about one-fourth the size of those of that species, the wings often being brightly colored. If the seeds are allowed to become very dry they soon lose their vitality or power of germination. In nature the seeds germinate soon after falling on moist ground, so that new plants are well developed during the same season in which they are produced. The little plants of the White
Maple are generally much larger than those of the Red Maple of the same age. Male and female flowers are usually produced on separate trees but, occasionally, both may be found on the same tree.

In this region about the middle of April is the normal time for our American or White Elm (Ulmus americana) to blossom. These flowers usually appear when the Red Maple blooms, but the dates may vary according to season. The little flat, winged fruits ripen at the end of May. Young plants 2 or 3 inches high should be developed in the same summer that the seeds are produced. An interesting peculiarity of the seedlings is that the first true leaves they produce are opposite while the normal phyllotaxy or leaf arrangement in later growth and in mature trees is alternate.

Alders and Hazels in various species, were in best flower early in April and the bloom is now over for this season. A careful examination of a flowering branch of Alder (Alnus) will show the fading male catkins at or near the tips of the branches while inconspicuous female or pistillate catkins are near them on separate stems. While in New England we usually think of the Alders, such as Alnus incana and A. rugosa, as being coarse shrubs, they may become small trees. There are truly arborescent species native on our Pacific Coast. An Asiatic species, Alnus japonica, is quite hardy in this latitude and may become 60 or 70 feet tall. The Hazels are also commonly regarded as shrubs but the European Hazel or Filbert (Corylus avellana) attains a height of 15 or 20 feet, while the Turkish Hazel (Corylus colurna) will, under favorable conditions, become a shapely tree 60 or 70 feet in height. Like the Alders, the Hazels are monoecious, producing male aments and female flowers on the same plants. While the staminate catkins show conspicuously at or near the ends of the twigs, the pistillate flowers are developed from lateral scaly buds, only the pistils being visible at time of inflorescence. These female flowers develop into the well known hazel-nuts or filberts, partly or sometimes wholly, surrounded by leafy husks or involucres.

The Poplars are distinctly among our early flowering trees. They are dioecious trees with the male flowers usually making a more conspicuous show than those with pistillate catkins. The proximity of male trees near dwellings may be the cause of much “dust” appearing on furniture while they are in bloom. A few weeks later the pistillate or fruiting trees may cause annoyance by the abundance of “cotton” which, at maturity, floats through the air, often in great profusion. This “cotton” is made up of innumerable, very slender, white, silky hairs which escape from the opening pods or capsules. These silky hairs are attached like parachutes to the very small seeds and enable them to attain a wide distribution through wind agency. Planters of the commonly used Poplars are confronted by annoyance from the pollen of the male trees or later by the escaping ripe seeds from the fruiting trees. Where only one or the other of the sexes will satisfy the ends desired, usually for quick growths or for screens, it is perfectly practicable to select that sex which will cause least annoyance. Plants
may be easily grown from cuttings, a mode of propagation hardly feasible with most of our desirable shade trees. Probably the most commonly employed of these Poplars are the Cottonwood (*Populus balsamifera*), the Canada Poplar (*P. canadensis*) which is regarded as a hybrid between *P. balsamifera* and the European Black Poplar, known botanically as *P. nigra*, and its variety *P. nigra italica*, the Lombardy Poplar. Many of the Poplars are crossed by hybridization, either naturally, by wind-transported pollen, or occasionally by the intervention of man. Therefore there may be many puzzling forms found in cultivation or in nature.

Our Quaking Aspen (*Populus tremuloides*) and our Large toothed Aspen (*Populus grandidentata*) are among the earliest of the Poplars to blossom, the precocious flowers appearing in the first days of April in some early seasons, but being subject to delay until the middle of the month or later if the season is cool. In the popular mind some of the Willows are acclaimed as the earliest of our trees to flower and indicate the approach of spring, but usually the announcement of early bloom merely indicates the bursting of the scales covering the buds and exposing snuggly packed catkins covered with fine, silky, white hairs attached to the small scales which subtend the numerous little flower buds found in each catkin. The swelling and splitting of the bud scales and exposing of the silky hairs may occur in early winter, during a mild period, two or three months before pollen and stigmas are matured. Hence the earliest of the Willows cannot be classed as really in flower before the Poplars. The most precocious species are merely shrubs and commonly blossom in early April, the arborescent species not generally flowering until the latter part of the month or later. Like the Poplars, the Willows are dioecious. Generally they are easily propagated by cuttings. If plants are desired for their pretty catkins, male plants will prove the most desirable as the anthers are more showy than the pistils.

Observation of our Conifers will show a number of genera and species which produce flowers very early in spring. The Larches are among the largest of our Conifers which flower in early spring before much development of new leaves. They are monoecious, the male flowers being usually short, button-like or globose, borne on the sides of the branches, while the female flowers appear less numerously as small cones than the male flowers. The bracts of the cones are often bright red or scarlet.

*Arbor-vitae (Thuja occidentalis)* was in best blossoming early in April in some localities and in some of its numerous forms. The flowers are among the smallest of those of our native hardy Conifers, averaging only about an eighth of an inch in diameter. A careful examination is necessary to discover the little purplish male flowers and the greenish female blossoms. The latter appear as swollen tips nearer the end of the twigs than the males. Another native tree with flowers even smaller than *Arbor-vitae* is the White Cedar of our swamps (*Chamaecyparis thyoides*) which usually produces its tiny male and female flowers in abundance on the same branches in early April.
Pinus pungens
In the latitude of Boston our Red Cedars (*Juniperus virginiana*) are past, their fullest bloom being in April. This group is usually dioecious, at flowering time the male trees being most conspicuous with the release of vast quantities of yellow pollen, the female trees seemingly flowerless but a close examination shows little pale green cones which develop into the characteristic small fleshy blue fruits.

The Yews also blossom early. They are commonly dioecious, so that if raised from seed only a part of the plants would produce the conspicuous red fleshy fruits characteristic of this genus. Any particularly desirable form is usually propagated from cuttings.

During the past two weeks *Magnolia stellata* and *M. denudata* have been in good flower although somewhat injured by late frosts. *Prunus Armeniaca* is flowering well this season, and Forsythias, Spice-bush (*Benzoin aestivale*) and Leatherwood (*Dreca palustris*), often mentioned in these Bulletins, were in their best flowering condition about April 27th. The single flowered Japanese Cherries are just passing out of bloom and the double flowered Cherries are now the most attractive feature in the Arboretum. Although there have been some injuries, the mildness of the past winter was, on the whole, favorable for plants so that, unless there are severe late frosts, the trees and shrubs should develop an attractive and interesting show of flowers.

J. G. Jack.

Flowering Habits of Trees and Shrubs. Most trees and shrubs bloom in the spring, but the flower buds may be formed and often are well developed long before the blossoms appear. In the Rhododendrons and Azaleas the young flower buds are formed in early summer. In August and September the pollen mother cells divide to form the young pollen grains. These develop and the flower bud is well formed and easily recognized in the fall. The buds remain dormant during the winter but complete their growth and blossom in late spring or early summer.

A more usual type of floral development is that found in the Apples. The flower buds are differentiated in July, but make little growth until the following spring. During the fall and winter they cannot be observed without dissecting the surrounding tissue. Development is resumed in the spring and the pollen grains are formed in late April or early May. The flowers open several weeks later.

A third type of floral development is found in the Larch. In the fall, the pollen mother cells begin to develop and show the early stages before division, but further growth is suspended until February. Growth is resumed periodically during the few warm days of late winter, and in March the divisions which form the pollen are completed. These cell divisions occur even when the snow is on the ground and the day temperatures are little above freezing.

The Conifers vary greatly in time of pollen formation. In Yews and Junipers the young pollen grains are formed in the fall. The