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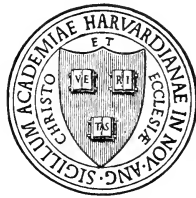
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# ARNOLD ARBORETUM

HARVARD UNIVERSITY



## BULLETIN

OF

## POPULAR INFORMATION

SERIES 3

VOLUME I

1927

GRAY HERBARIUM  
HARVARD UNIVERSITY

2-

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OF  
POPULAR INFORMATION

SERIES 3. VOL. I

APRIL 23, 1927

NO. 1

**Spring**, which made a furtive effort in mid-March, is now here in a hurry. In fact, the temperature today (April 20) is more that of summer than of Spring. On March 8 the Chinese Witch-hazel (*Hamamelis mollis*) and the Silver Maple (*Acer saccharinum*) were in flower; on the tenth the Japanese Witch-hazel (*Hamamelis japonica*) opened its blossoms; on the twelfth pretty *Erica carnea* was crowded with pink bells; on the fifteenth *Ribes cereum* was in open leaf and blossoms on the north China Peach (*Prunus Davidiana*) were showing color. There was every prospect of a very early season but the weather changed and Spring was deferred another month.

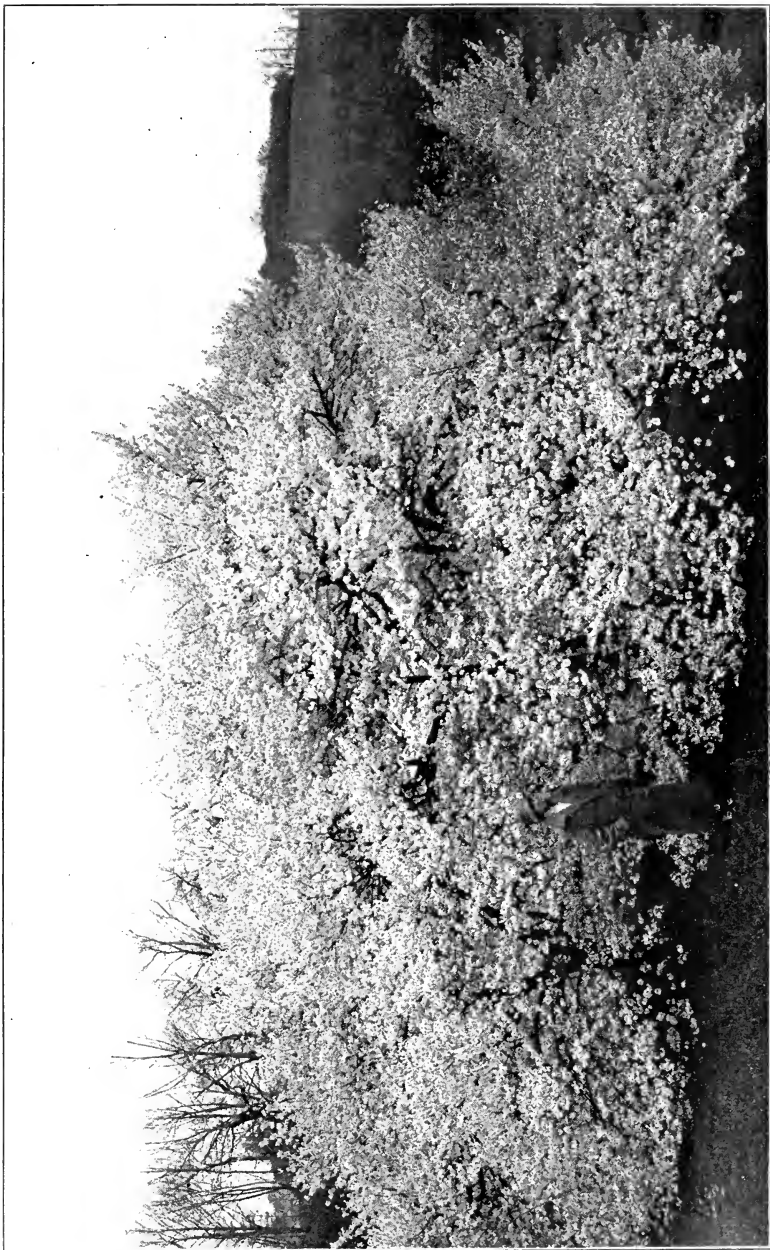
**Winter effects.** The winter has seemed unusually long, snow fell the first week in December and lay on the ground until March. During December there were several heavy falls of snow but the other winter months were marked by only moderate snowfalls. No extremely low temperatures were recorded in the Arboretum and frost did not penetrate any great depth into the ground. So far as the soil itself fared it is many years since the ground was workable so early. Although long, the winter has been decidedly mild and the trees and shrubs in the Arboretum have suffered little or no damage. A few Carolina Hemlocks and the Japanese Black Pine (*Pinus Thunbergii*) got scorched. The Cedars of Lebanon on Bussey Hill, the Rhododendrons, Kalmias and other broad-leaved evergreens came through in splendid condition. The Azaleas, Crabapples, Cherries and other deciduous trees and shrubs give promise of plenteous blossom. There will, however, be no Lilac display this year. Owing to impoverished conditions it has been necessary to prune the Lilac bushes severely and liberally fertilize the soil. By this treatment and allowing them a year in which to recuperate there should be a fine display in 1928. For the public's sake it is a pity that the Lilacs had to be given a year's grace but there is a limit to the endurance of even the good natured Lilac.

**Prunus Davidiana.** The forcing effects of the warm weather in early March threatened danger to early flowering plants but ap-

parently no real harm was done. Both the white and pink forms of *Prunus Davidiana* opened their blossoms early in April only to be destroyed by frost. This tree is too precocious for these latitudes. It rarely happens that a Spring passes without its flowers being partially or wholly destroyed. Where the climate is less changeable it should be a valuable early flowering tree. In the Middle West as a stock on which to graft Peaches it is well appreciated but it ought to be grown widely as an ornamental.

**Apricots.** For the climate of Massachusetts the Manchurian Apricot (*Prunus mandshurica*) is likely to prove a first-class Spring flowering tree. During the last week-end a tree on the right hand side of Meadow Road, on the edge of Robina group, has been a beautiful picture. About 20 feet tall, with a flattened, irregular crown spreading full 25 feet, every branch of the tree was studded with deep pink flower buds which as they opened became pale colored. We noticed that bees were particularly busy and on Sunday last the tree was alive with them. This Apricot is native of Korea and Manchuria, where it grows some 30 feet tall and has a short massive trunk covered with thick corky bark which shows red beneath the surface. It has been growing in the Arnold Arboretum since 1906 but this year has flowered much more profusely than ever before. At the moment the Siberian Apricot (*Prunus sibirica*) is a mass of white and, so too, is a Japanese form of the Common Apricot (*P. armeniaca*) known as *mikado*. These three Apricots are well worth the attention of tree-lovers and nurserymen. They are suited for planting on lawns and near houses; also they would be valuable for town gardens and small parks in the heart of cities.

**Forsythias.** The bank of Forsythias by the Lilac collection is now strung with yellow bells and in a day or two will be a blaze of rich yellow. These Oriental shrubs are everywhere great favorites but it is regrettable that their care, especially the matter of pruning, is so little understood. As one sees them in gardens generally they are shorn of beauty through ignorant pruning. If people would only cut them immediately after their flowering is passed they would have graceful bushes hugging the ground instead of the broom-like masses one so frequently sees. It cannot be too often stated that all shrubs which flower on the past season's growth should be pruned immediately after flowering and thus be given a long season for making and ripening new flowering wood. All the Forsythias are good. The best is, undoubtedly, *F. intermedia spectabilis*, which has larger and richer yellow blossoms than the others. Massachusetts is about the northern limit of the Chinese Forsythias and their hybrids. The Korean species (*F. ovata*) with small pale yellow flowers is much the hardiest and although the flowers are smaller and the color not so deep it promises to be a valuable shrub for northern New England and even the valley of the St. Lawrence. It is native of the Diamond Mountains in north-central Korea and was introduced into the Arnold Arboretum by Wilson in 1917. As a screen for draping walls and large boulders the old *F. suspensa* with its long, whip-like branches is still the best.



The Japanese Spring Cherry (*Prunus subhirtella*)

**Japanese Cherries.** By the time this bulletin reaches its readers the Japanese single-flowered Cherries will be at the height of their glory. The two round-topped shrub-like trees of the Spring Cherry (*Prunus subhirtella*) on the right within the Forest Hills Gate are bearing their usual luxuriant crop of blossoms which are deep pink in the bud becoming paler as they open and almost white when full blown. This splendid tree is not surpassed in beauty by any Spring flowering tree. Unfortunately, being a garden type of a larger much less free-blooming tree known as *Prunus subhirtella ascendens*, the Spring Cherry does not come true from seeds. It must be propagated by budding or grafting on seedlings of the parent stock. It can be rooted from cuttings but these seem difficult to establish and especially to transplant. The Rosebud Cherry (*Prunus subhirtella pendula*) is well-known although one rarely sees a real good specimen. This also should be grafted or budded on its wild parent (*Prunus subhirtella ascendens*). A small percentage will come true from seeds, so by sowing a large quantity of seeds, selecting and training, it should be possible to get large specimens of the Rosebud Cherry on its own roots. A small tree of the semi-double so-called Autumn-flowering Cherry (*Prunus subhirtella autumnalis*) is carrying a fine crop of blossoms on the right within the Forest Hills Gate. This is a precocious tree of small size perhaps best described as a bush with ascending, spreading, twiggy branches and semi-double pink blossoms produced either in October or in the Spring. Like all its family it is worth a place in every garden. The Mount Fuji Cherry (*Prunus incisa*) is again covered with pure white, yellow-anthered blossoms. As the petals fall the calyx becomes reddish and finally crimson adding beauty to the plant for several days. The Sargent Cherry (*Prunus serrulata sachalinensis*) is opening its rich pink fading to white blossoms and promises as fine a display as usual. This, the largest and hardiest of all the Japanese Cherries, ought to be planted as an avenue tree and as a specimen on lawns and in parks. Being surface-rooting Cherries are good for shallow soils and blossoming early they are splendid for city parks. The Tokyo Cherry (*Prunus yedoensis*) is also in bloom. Although less hardy than the Sargent Cherry this is a very rapid growing tree with a wide-spreading dome-shaped crown. It is this Tokyo Cherry that makes the display on the banks of the Potomac in Washington, D. C. We are almost on its northern limits here but from Long Island south it ought to be planted as an avenue tree or as a single specimen in great quantities. Its white flushed with pink flowers are borne in the utmost profusion although, as a matter of fact, this applies to all the Cherries of the Orient.

E. H. W.

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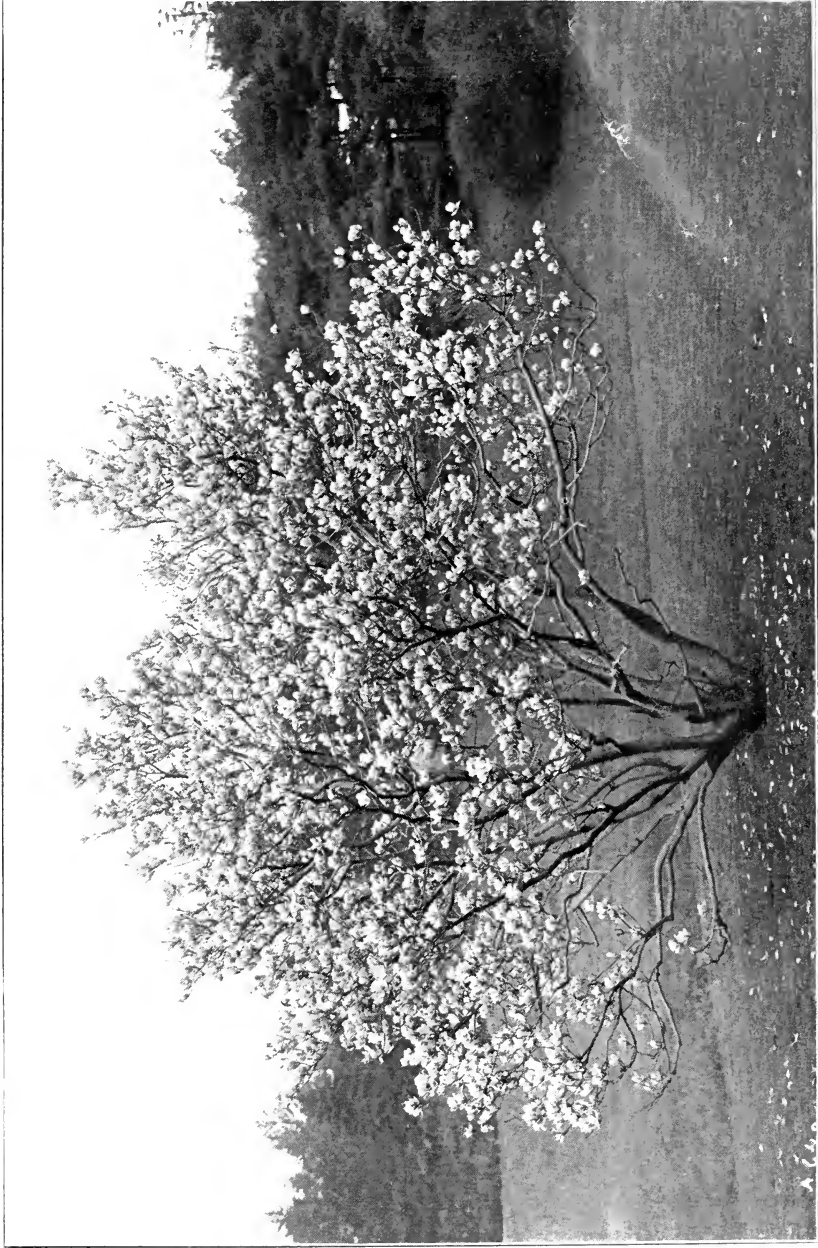
NO. 2

**Asiatic Magnolias.** With their large flowers opening before the leaves appear these are the most magnificent of early flowering shrubs and trees. The first of the group to expand its blossoms is the Star Magnolia (*Magnolia stellata*), a plant which came to America from Japan in 1862 but whose origin in a wild state is still undetermined. It is a much-branched bush or small tree producing in great quantity snow-white star-shape flowers the petals of which are loose and reflexed. The blossoms are delightfully fragrant filling the air with pleasant aromatic odor. With the exception of the Kobushi (*M. kobus*) it is the hardiest of the Magnolias but its blossoms opening early are apt to suffer from frost. This year the erratic weather in early April scorched a few blossoms but on the whole the plants outside the Administration Building have never been finer. Nearby three shapely bushes of the pink form (*rosea*) are now in full bloom. These are quite a good pink in the bud but when expanded the flowers are almost white. The most northern of the Asiatic Magnolias and the hardiest is *M. kobus* native of Japan and southern Korea. This is a large tree growing from 60 to 70 ft. tall with a broad pyramidal crown. The flowers are pure white, loose petalled, fragrant and abundantly produced. The white and purple Yulans have been favorites in Chinese gardens from the 7th century of the Christian Era and were among the earliest plants brought from the Orient into western gardens. The White Yulan (*M. denudata* more widely known as *M. conspicua*), is perfectly hardy in the Arboretum. It is a tree of moderate size with large milk-white chalice aplenty. The Purple Yulan (*M. liliiflora* or *M. purpurea* as it is commonly called) is much less hardy and so far we have failed to establish it in the Arboretum. More popular in American gardens than either of the Yulans is *Magnolia Soulangeana*, a hybrid between the two which originated in France in 1820. There are now many forms of the handsome Magnolia varying in color from nearly white through varying shades of pink to rich wine-red or crimson-purple. In front of the Administration Building several named varieties of this Magnolia are now opening abundant blossom. The White Yulan and the Soulange Magnolia

do extraordinarily well in town gardens and city parks, where they are extremely valuable on account of the earliness of their flowering. In cities, like Hartford, Connecticut, and Rochester, New York, many magnificent specimens of these Magnolias may be seen. When one considers that the natural home of Magnolias is moist woods it is strange that they can withstand the vitiated atmosphere and arid conditions of cities. The wondrous beauty of these Asiatic Magnolias has caused them to be widely planted in America. The stock was drawn from Europe, principally Belgium and Holland, but since plant quarantine has come into effect this source of supply has been cut off and these Magnolias are scarcely obtainable at any price. It is to be hoped that American nurserymen will seriously set about the task of raising them in quantity. They may be propagated readily by layering and also by grafting. The strong growing *Magnolia kobus*, which ripens its seeds freely in this climate, would make an excellent stock; another that can be used is the Cucumber-tree (*Magnolia acuminata*) native of eastern North America.

**The Chinese Almond.** One of the most delightful of Spring flowering shrubs is the Chinese Almond (*Prunus triloba*) of which three forms are growing just within the Forest Hills Gate. The oldest and best known has very double, pink, rose-like flowers, each about an inch across, borne freely along the whole length of the past season's shoot. More beautiful with deep pink, semi-double flowers with conspicuous yellow-anthered stamens is the form *multiplex*, which was introduced into the Arboretum from near Pekin by Purdom in 1909. The plants were raised from seed and one of the originals may be seen a picture of loveliness at this moment among the Chinese shrubs on top of Bussey Hill. The simple-flowered form (*simplex*) has been growing here since 1883 when it was raised from seeds sent from Pekin by Dr. E. Bretschneider. The third and fourth generation of the original plants may be seen clothed with pure pink blossoms on the edge of the Shrub Garden by a small pond. The Chinese Almond is, as a rule, a short-lived plant but by the Parkman monument on the edge of Jamaica Pond there is growing a magnificent specimen in perfect health and 60 feet round. The double flowered forms benefit from hard pruning after the flowers have fallen. We have seen them grown to advantage espalier fashion against walls. After flowering the shoots are cut hard back to the old wood, new growth is quickly formed and this flowers abundantly the following year. This system may be recommended to those who garden in the colder parts of New England and in the St. Lawrence Valley.

***Prunus tomentosa*.** This broad, rounded Oriental shrub with multitude of thin, whip-like stems is now opening its white tinged with pink blossoms just within the Forest Hills Gate. It is a very hardy plant and has recently come into favor in the middle and western states for its fruit, which is scarlet, cherry-like and of pleasant sub-acid flavor. Like its relative it is not a long-lived plant but may be easily propagated by seeds. Wide-spread in the Orient it is found in quantity throughout southern Korea, Manchuria, northern and western China. A number of forms have been distinguished by



The favorite *Magnolia Soulangiana*.

botanists but the differences are technical and have no garden significance.

**Chinese Pears.** The Chinese Pears on top of Bussey Hill and those on the left of Forest Hills Gate and in the collection at the foot of Peter's Hill are opening their blossoms. The first to bloom is *Pyrus ussuriensis*, native of northeastern continental Asia, where it grows to a very large size. In Korea trees 60 ft. tall with rounded crowns spreading 75 ft. and trunks 10 ft. in girth are not uncommon. In northeastern Asia it has been long cultivated as a fruit tree and some of the selected varieties produce quite good fruit. This is green, round to ovoid in shape, with firm gritty white flesh rich in sugary juice. On some trees the flowers are pink in the bud and suggest the familiar apple-blossom. The Chinese Sand Pear (*Pyrus serotina*) has a similarly hard juicy fruit but is russet-brown without and varies enormously in size. This tree is wild in the woods of central China and has been long cultivated in China from whence it passed to Korea and Japan. It grows from 50 to 60 ft. tall, has a more or less pyramidal though sometimes a flattened round crown and produces large pure white blossoms. It is really very ornamental when in flower. The wild type has russet-brown flattened round fruits each about an inch in diameter. A relative with smaller flowers found wild in the same part of China is *Pyrus serrulata*. A species which promises to be of great value to fruit growers in this country on account of its virtual immunity to Pear blight is *P. Calleryana*. This is a tree of variable size exhibiting diversity in shape of foliage, found in a wild state from southern Japan and Korea throughout a great part of China. The flowers, borne together in rounded clusters, are small with white petals and prominent pink-anthered stamens. The fruit is brown and about the size of a garden pea. Introduced into this country by the Arboretum through seeds sent by Wilson in 1907, it has grown rapidly and for several years past has flowered and fruited each season. Seeds in great quantity have been disseminated far and wide in this country for the purpose of raising plants for use as understock on which to graft garden Pears. If its immunity to Pear blight be maintained this tree will prove to be one of the most valuable introductions to orchards this country has enjoyed.

**Shadblows.** The earliest Shadblow to blossom (*Amelanchier canadensis*) is now in full bloom. It is native of western Massachusetts and western New York south to the Gulf states. Described by Linnaeus in 1753 other sorts have usurped the name and the true plant has long been rare in gardens. It is a tree, at its maximum full 60 ft. tall with a trunk 5 ft. in girth, with a dense round-topped crown of thin branches; the flowers as they open are often tinged with pink and are produced in ascending and nodding racemes. The flowers expand at the same time as the leaves which are clothed with a floss and the whole tree is wreathed in snowy whiteness. E. H. W.

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SERIES 3. VOL. I

APRIL 30, 1927

NO. 3

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**Shadblows.** To the Rose family gardens are indebted for many of their finest plants in herb and bush and tree and among these must be counted the Shadbushes, Shadblows, Juneberries or Service-trees as they are variously called. The tribal name is Amelanchier and the trivial name Shadblow or Shadbush is in allusion to the fact that they blossom in the time when the Shadfish ascends the streams from the ocean. Juneberry denotes that the berries ripen in the month of June and Service-tree that the fruit is edible. In Europe the native species is known as the Snowy Mespilus. These plants are essentially American being found wild from Labrador south to the Gulf and from Newfoundland west to the Yukon. One outlying member is native of Europe, another of China and Japan but in America the species are many and the plants themselves multitudinous. Most of the species are many-stemmed bushes but about five of them are trees of moderate size. They constitute a very important floral feature of our spring landscapes and their tinted foliage in autumn adds much to the brilliant autumn pageant. They abound in thickets, on the margins of woodlands, in swamps and open moorlands. With few exceptions the flowers are star-shape, white, with relatively long, narrow spreading petals and borne in short, slender, spreading and ascending racemes. The leaves, which unfold at the same time or immediately after the blossoms, are usually clothed with a white floss of hairs and the whole plant appears sheeted in snow-white. In a few species the flowers as they open are tinted pink and in one common tree-type the young leaves in pleasing contrast with the rest of the family are red-purple. All have slender branchlets of delicate tracery. In the spring landscapes they suggest waves of spindrift of snowy whiteness, floating or suspended through wood and thicket. A strong family likeness pervades the group. All have smooth steel-gray bark, hard and heavy wood, slender branches and oval to roundish leaves variously toothed on the margin. The fruit is edible and in some sorts quite palatable. Their cultivation is easy for they thrive in any ordinary soil provided it is not too alkaline or permanently waterlogged. They rather like limestone and love good loam and leafsoil. The bushy types send up suckers freely from the roots and soon make thickets. These are

splendid for boundary planting or for the wild garden. The tree sorts are fine as specimens a little removed from the dwelling house, where their beauty may be glimpsed from the windows. All are easily propagated by seed and the bush forms may be increased by lifting the sucker-growth and by layering. Although they fill a niche and add welcome beauty to any garden, Shadblows are difficult to procure. Their loveliness notwithstanding, nurserymen have treated them with contumely for are they not common native plants? A few of the more enlightened and progressive, however, are beginning to catalogue them, which is an encouraging sign of the awakening that is taking place. In the Arboretum these plants have been extensively planted along the drives, and on the edge of woods two species (*A. laevis* and *A. oblongifolia*) are native.

**Tree Shadblows.** In the last Bulletin we told that the earliest Shadblow to blossom is *Amelanchier canadensis* and as its petals fall and the white fluff of its foliage is flung off the flowers of *A. laevis*, a second tree species, expand. This has red-brown young leaves almost destitute of hairs and in fine contrast erect or nodding racemes of white flowers. Widespread from Newfoundland south this is a tree up to 50 ft. tall with a trunk 5 ft. in girth and a rather open narrow crown. The ruddy tinted young foliage gives to it distinction and character and associated with other deciduous trees it is most effective in springtime. One of the loveliest of all is *A. grandiflora*, a natural hybrid between these two species. Like its parents this is a tree but the flowers are much larger than those of any other American Shadblow. The blooms also last long in unsullied whiteness and the plant stands forth an aristocrat. This hybrid grows wild in the woods round Rochester, New York, where a lovely form of it (*rubescens*) with rose-tinted blossoms also occurs. The third American tree species is *A. alnifolia* known to the Indians as the Saskatoon. It is a slender tree, rarely exceeding 25 ft. in height, with a loose crown or irregular shape and white flowers in erect racemes opening at the same time as the leaves which are densely clad with an evanescent white floss. Its fruits are sweet and juicy, nearly globose in shape, dark blue-black, often three-quarters of an inch in diameter, larger and more valuable than those of any other Shadblow. Found over an immense area of country from the southwestern shores of Lake Superior west and northwest to the Valley of the Yukon River it is a most important tree to the Indians who gather and dry the fruit which serves them as an article of food.

**Bush Shadblows.** The largest of the bush Shadblows is *A. oblongifolia*, a very common species through eastern North America. This shrub grows 18 ft. tall and forms dense ovoid clumps of many erect stems sometimes 12 ft. through. Its flowers and leaves with white cottony covering unfold at the same time. Throughout New England this species is a conspicuous feature of the landscape in spring with its blossoms, in June with its wealth of fruit and in autumn with its vari-colored foliage. Another shrubby Shadblow is *A. spicata* which grows from 6 to 10 ft. tall and is distinguished by its erect dense-flowered racemes. *A. humilis* is dwarf and twiggy and *A. stolonifera*



Loveliest of the Shadblows (*Amelanchier grandiflora*).

spreading from underground stems forms low thickets. Both are well suited to the wild garden. So, too, is *A. florida*, native of the Northwest, which produces a mass of erect stems from 8 to 10 ft. tall and has rich yellow autumn foliage. Handsome also are *A. sanguinea* and *A. amabilis*, both shrubs of good size with relatively large blossoms. Quite distinct is *A. Bartramiana* an inhabitant of bog lands from Labrador southward with large milk-white, saucer-shaped flowers solitary or rarely in few-flowered clusters. Growing from a few inches to a full yard tall it is a floriferous little plant of twiggy habit.

**The European Shadblow.** The European Shadblow is known by several names, most widely perhaps as *A. vulgaris* but correctly as *A. ovalis*. It is the oldest known Amelanchier and has been in cultivation for upwards of two hundred years. A native of central and southern Europe it is usually a shrub but under favorable conditions forms a good-shaped tree from 18 to 25 ft. in height. It has stouter branchlets, fatter and more ovoid winter buds than its American kindred. Also it produces the largest flowers of any species, each blossom being often  $1\frac{1}{2}$  inches across and clustered in erect racemes. The leaves with their coat of woolly hairs unfold at the same time and the whole plant appears mantled in white, hence in Europe it is called Snowy Mespilus. About four other species are natives of southeastern Europe and western Asia but are not in cultivation.

**The Oriental Shadblow.** The Oriental Shadblow is *A. asiatica*, a small tree from 15 to 25 ft. tall, with a flattened crown of irregular outline. It is rare in Japan and Korea but in central China a variety, named *sinica*, is one of the most common and most beautiful of the lesser trees. An inhabitant of thickets and thin woods it is abundantly floriferous and in spring the trees are conspicuous from afar. The flowers are large, white as driven snow, and produced in nodding racemes. Unlike all other Shadblows the fruits do not ripen until late September or October and unless eaten by birds hang on the trees throughout the winter.

**Prinsepia sinensis.** In the Shrub Garden a large, dome-shaped bush of this fine shrub is in full blossom; there is another less shapely specimen on Centre Street Path. The arching, spreading branches are densely clothed with clusters of yellow plum-like blossoms which emit a strong odor of almonds. The fruit is plum-like, enclosing a flattened prettily sculptured stone. This plant has been growing in the Arboretum since 1903 and has never known winter injury. Its name, notwithstanding, it never knew China, its home being the adjacent country of Manchuria where a harsh climate prevails. Among the Chinese plants on Bussey Hill a white-flowered species (*P. uniflora*), introduced through Purdom in 1911, is loaded with flower-buds which will open later. Though not so fine as its yellow-flowered sister this is a good plant especially for rocky places. To those interested in the curious it may be worth noting that among the great Rose family this small genus Prinsepia is the only one that has a lamellate pith. E. H. W.



# ARNOLD ARBORETUM

HARVARD UNIVERSITY

## BULLETIN

OF

## POPULAR INFORMATION

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SERIES 3. VOL. I

MAY 7, 1927

NO. 4

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**The Prunus** Tribe are the first trees to blossom in spring and so numerous are the members that different sorts are in bloom over a period of at least five weeks. Our first Bulletin told of certain single-flowered Japanese Cherries. Their double-flowering brethren will open their flowers in another week when they shall receive due recognition. The Sargent Cherry near the Forest Hills Gate is aglow with ruddy-tinted young leaves and nearby is a shapely tree of *Prunus avium* (the Gean or Mazzard) laden with pure white blossoms. This is a handsome tree of more or less pyramidal habit, growing 60 feet tall, with a trunk, occasionally 6 feet in girth, clothed with polished, chestnut-brown bark. It is a native of Europe and the Sweet Cherries of our orchards are descended from it. There is a double-flowered form (*plena*) which opens its blossoms a week later than the type. In bud the flowers are flushed delicate pink but when fully expanded they are pure white, an inch to an inch and a half across, with about thirty to forty petals lasting long in beauty. It has been known for two centuries, but like many other good trees is all too rarely seen in American gardens.

**Prunus Cerasus.** Later to blossom is *P. Cerasus*, the Sour Cherry, also native of Europe but as an ornamental much inferior to the Gean. There are, however, two double-flowered forms of this Cherry of great value. One known as *plena* has semi-double flowers, white, each one and a half inches across. This is a round-topped tree, seldom more than 25 feet tall, with a thick trunk clothed with rugged, dark gray bark. More double are the flowers on the variety *Rhexii*, often known as *multiplex* or *ranunculiflora*, which is characterized by very double flowers in which two green leafy pistils stand prominently forth. The flowers are of the purest white, an inch and one half across, drooping from long stalks. The tree is a worthy rival of the double-flowered Gean which blossoms two weeks earlier. *Prunus Cerasus* is the parent of the Morello Cherries of our orchards. There are several other forms of the Gean and Sour Cherry but those mentioned are the best and most worthy.

**Prunus japonica Nakaii.** An old denizen of gardens is *P. japonica*, a twiggy shrub, growing from three to five feet tall, native of the

Orient and found here and there in New England as a naturalized plant. Just within the Forest Hills Gate, on the right, is a bed of *P. japonica Nakaii*, which is the Korean representative of the species. This is flowering freely for the first time and is a pretty little shrub. The branches are twiggy, erect, and clad from bottom to top with fascicles of flowers, tinted pale pink in the bud, pure white when expanded. It differs from the type in the leaves being pubescent on the under side and glabrous, or nearly so, above. The fruit is round, about a quarter of an inch in diameter, dark scarlet and quite attractive. A common plant by the wayside and on bare mountain slopes in Korea, it was introduced into cultivation by the Arboretum through seeds collected by Wilson in 1917. Our experience is that it transplants badly from the open ground and should be grown in pots.

**American Plums.** The flowers have fallen from the Canadian Plum, *P. nigra*, the first of the American Plums to open blossoms but those of *P. americana* are just expanding. This is a variable plant, widespread from Massachusetts west to Manitoba and south to Georgia, and cultivated since 1768. It is a round-topped tree, seldom exceeding twenty feet in height, with dense intricately placed branches and a wealth of small, white, Hawthorn-like scented blossoms. Quite a number of pomological varieties are in cultivation. This and other tree-species of American Plums are valuable for planting in groups on the edge of woods, in glades or at vantage points some distance removed from the house. More valuable for garden purposes is *Prunus maritima*, the Sand or Beach Plum, a very common plant on Cape Cod and elsewhere along the eastern coast of the United States. This is anything from a bush hugging the ground to a broad-topped shrub ten feet tall. Its abundant pure white blossoms form a pleasing picture in the spring; later fruits, red or purple, round or oblong in shape and from one half to an inch in diameter, crowd the branches. There is also a form (*flava*) with yellow fruits. The Beach Plum is another native plant which has been too much neglected. For planting in sandy places there is of its class nothing better; also it does well in rocky ground. For shore gardens it should be planted in masses and in quantity.

**Oriental Quinces.** In the Shrub Garden one of the long beds is filled with different varieties of Oriental Quinces which are descended from two distinct species. These are bushes of sprawling habit whose irregularly placed shoots give much character to the plants. The flowers vary from pure white (*nivalis*) to dark fiery crimson (*Simonii*); some are flesh-colored, others shades of pink, red and scarlet. The more robust growing of the two species has long been known as *Cydonia japonica*, abbreviated by the gardening fraternity to plain *japonica*, but its correct name is *Chaenomeles lagenaria*. It is one of the plants long cultivated in the Orient and by Buddhists carried far and wide. Its name notwithstanding, it never knew Japan except as a cultivated plant, its home being central China where Wilson found it wild in 1900. Visitors to Cape Cod and other places in Massachusetts at this season of the year will note here, there, and everywhere, fine bushes or even hedges of the *C. lagenaria*. In Japan, especially in grassy open areas, another Quince is wild in great abundance. This is widely known in



Clove-scented *Viburnum Carlesii*

gardens as *C. Maulei* but its correct name is *C. japonica*. This is less robust than its Chinese sister with twiggy branches hugging the ground and orange-red passing to scarlet flowers. Both species bear ovoid fragrant fruits of no comestible value. Their charm is in the beauty of flower and habit of growth. Old favorites are they, yet it is difficult to procure these plants from nurserymen today. There is no reason why this should be so since they can be raised from seeds and may be easily increased by division, by layering, and by root-cuttings.

**Pieris floribunda.** This evergreen bush with paniced masses or urn-shaped flowers, and valuable on account of its hardiness, is not flowering so freely this year. More handsome with lustrous foliage and larger flowers is the Japanese *P. japonica*, which unfortunately can be only just kept alive in the Arboretum. The different *Vacciniums* are opening their multitudinous blossoms and with their young tinted foliage are conspicuous, none more so than the Highbush Blueberry (*V. corymbosum*), a feature of swamps and open places everywhere in this part of the world. On drier places it has a rival in the low-growing *V. pennsylvanicum*, an excellent native ground-cover. The Leather-leaf (*Chamaedaphne calyculata*) is also in blossom, each twiggy shoot terminating in a raceme of white urn-shaped flowers. This is a circum-polar plant that might be more freely used in gardens. It can be seen in bloom with other of its relatives in the Shrub Garden. Nearby is twiggy stemmed, pink-blossomed *Andromeda glaucophylla*, with evergreen, ascending, rosemary-like leaves, dark green above and white below. This is a boreal plant found from Newfoundland and Labrador west to Manitoba. Another species, *A. polifolia*, extends from Idaho westward to the Pacific coast and throughout northern Asia into north and central Europe.

**Viburnum Carlesii.** The first of the *Viburnums* to open its blossoms is the rare *V. fragrans* from China, and this is followed by *V. alni-folium*, the native Moosewood or Hobblebush. This familiar plant is wide-spread in woodlands throughout New England and elsewhere in eastern North America, but is exceedingly difficult to cultivate. In nature it favors moist places but the best plant in the Arboretum is on a dry bank beneath the Birches. The Hobblebush forms its flower clusters in the autumn and cut branches brought into a warm house in late February and March will open their flowers in water. There is a variety (*praecox*) which blossoms about three weeks earlier than the type. Next in order of blooming is the Korean *V. Carlesii*, whose blossoms distil a fragrant scent of cloves which fills the air around. This shrub is now getting properly known in gardens and appreciated on account of its sterling qualities. Unfortunately, plants on their own roots are difficult to come by and those grafted after a few years cease to grow freely and remain stunted in habit and ultimately die. In the *Viburnum* Collection near Centre Street Gate may be seen two fine specimens of Carles' *Viburnum*, which are on their own roots and at the moment covered with conspicuous rounded clusters of flowers, waxy in texture, each pink-tinted in the bud and pure white when fully expanded. Among early-flowering shrubs this is Korea's great gift to our gardens.

E. H. W.

# ARNOLD ARBORETUM

HARVARD UNIVERSITY

## BULLETIN

OF

## POPULAR INFORMATION

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SERIES 3. VOL. I

MAY 12, 1927

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**Asiatic Crabapples** are not exceeded in beauty and hardiness by any tribe of plants and yet they are comparatively rare in American gardens. A few species like *Malus Halliana*, *M. floribunda* and *M. spectabilis* are fairly well-known, while here and there in city parks, such as those of Rochester, New York, several others may be seen in all their beauty. But really there should be no garden, even a suburban garden, without its Crabapple-tree. Lovers of breeze and sunshine and rugged of constitution, Crabapples are well suited to the rigorous climate of northeastern America. Wherever the Common Apple can be grown its sisters and brothers will flourish and many of them are able to withstand greater cold than our favorite fruit-tree. A good loam, rather on the stiff side, is ideal for Crabapples and they do not by any means object to lime. As to site, provided it is open and exposed, they are not particular, though a hillside or slope is preferable. Their common pests are scale-insects and a white woolly aphid known as American blight. The former may easily be kept down by spraying in late winter with Lime-sulphur or Imperial Soap (one gallon to eight gallons of water). The blight is destroyed by spraying in summer with Imperial Soap (one gallon to thirty gallons of water).

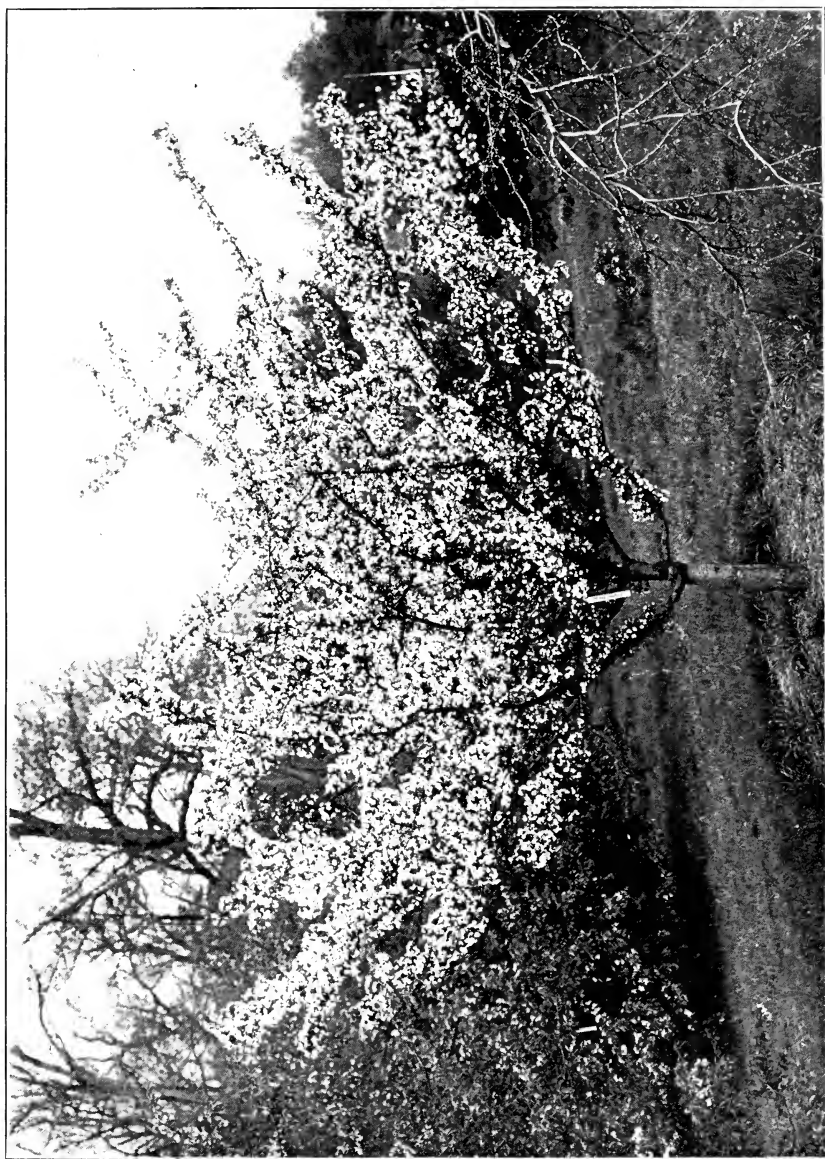
**The flowers** of many Asiatic Crabapples are bright rose-pink in the bud changing to white as they expand. Such are those of *M. floribunda* and *M. theifera*. Those of *M. Sargentii*, *M. toringoides*, *M. baccata* and its forms are pure white. In *M. spectabilis* the flowers are pink fading to nearly white, and in *M. Halliana* they are bright rose-pink becoming slightly paler as they age. The flowers are followed by an abundant crop of small fruits, in most species scarcely larger than a good-sized, marrow-fat pea, either crimson, wine-red, yellow, or red and yellow, but in a few dull greenish red. The flowers last about a week; the fruits for several months, indeed in several species they remain fresh in appearance throughout the winter. In spring the branches from tip to base are plumes of blossoms, in autumn they are brilliantly jewelled with fruits. Of the Asiatic Crabapples, *M. Halliana*, *M. floribunda* and *M. spectabilis* are not particularly difficult to obtain. The Japanese and many people in eastern North America con-

sider *M. Halliana* the finest of all Asiatic Crabapples. Certainly it is the most handsome of all with colored flowers. It is a tree-like shrub, sometimes 15 feet tall, with a broad bushy crown of ascending-spreading branches and twiggy branchlets and rather sparse, comparatively thick, dark green leaves deeply tinged with bronze-color when they unfold. The flowers, each on a long slender stalk, are borne in clusters and are bright rose-color but the pea-like fruit, which ripens late, is greenish red and unattractive. The flowers vary from nearly single to semi-double and the central one of each cluster is usually male.

**Food for Birds.** Did we ask our feathered friends the season of the Crabapples they would certainly answer the fall. To those who love birds, Crabapples have treble values, since to the aesthetic qualities of flowers and attractive autumn fruits they add that of providing winter food in quantity. And beautiful are these plants at that season laden with myriads of small, brightly colored fruits. Indeed Crabapples claim and must be granted two seasons: late spring for their blossoms, autumn for their fruits.

**Where to Plant.** The abundance of flowers and fruits produced by these plants is truly astounding and no tribe gives greater returns. Near the house no small tree could be more attractive than the shapely *Malus Halliana* with clustered rose-pink, pendent, more or less double flowers; on a bank, with its bottom branches hugging the ground, the low, broad white-flowered *M. Sargentii* is splendid. For the flower garden many sorts are good, none more so than the old favorite *M. spectabilis*, with pink, semi-double blossoms and the new *M. theifera*, with white flowers, rose-pink in the bud. As a flowering tree in the open landscape, *M. baccata mandshurica*, with an oval crown full fifty feet tall, the lower branches sweeping the ground and pure white, fragrant flowers, cannot be excelled. This and other tall kinds may also be planted with advantage on the edges of woods, especially where Oak trees predominate. An occasional Pine, Fir, or Spruce well to the rear adds greatly to the landscape effect.

**Malus floribunda.** Perhaps the best known and by some considered the finest Crabapple of the Orient is *M. floribunda*. This is a broad, round topped tree, sometimes thirty feet tall and more in diameter of crown, with a tangle of branches and masses of slender, arching and pendent branchlets. The clustered flowers are white when fully expanded, bright rose-pink in bud, and as they open in succession the contrast is singularly beautiful. A cascade of myriad flowers symbolizes this Crabapple when in full bloom. In 1883 there appeared in the Arnold Arboretum among some presumed seedlings of *M. floribunda* a very distinct plant which has since been named *M. arnoldiana*. It has the habit and abundant flowers of *M. floribunda* but the flowers and fruit are nearly twice as large. Now these four Crabapples are admittedly princes of a very large family but there are many other members whose merits are deserving of the widest recognition. Space does not permit of an exhaustive list but the following ought to be widely known and planted freely:



*Malus theifera*

**Malus baccata mandshurica.** First of the Crabapples to burst into bloom is the fragrant *Malus baccata mandshurica*, native of north-eastern Asia. This tree is one of the largest of its tribe and produces an abundance of pure white flowers, each rather more than one inch across and more fragrant than those of any other Asiatic Crabapple. In a wild state it is often more than fifty feet tall, with short, thick trunk and a broad, bell-shaped crown. Its fruits, each no larger than a good-sized pea, are yellow or shining red.

**Malus Sargentii.** The pigmy of the Crabapple family is *M. Sargentii*, with umbellate clusters of saucer-shape flowers of the purest white, in which nestle a tiny group of stamens tipped with clear yellow anthers. It is a low, densely branched shrub which hugs the ground, and is pre-eminently suited for planting on banks. The fruit is wine-red, covered with a slight bloom, and long persistent. From the salt marshes of Hokkaido, the northernmost island of Japan, came this gem, discovered and introduced and fittingly named for the man who brought the Arnold Arboretum into being some fifty-four years ago.

**Malus theifera.** Rigid of branch, with wands of blossoms often fifteen feet long, the Chinese *M. theifera* is the very quintessence of Crabapple loveliness. It is a small tree, seldom exceeding twenty feet in height, with sparse upright and spreading rather zigzag branches, which are densely studded from base to tip with short flower-bearing spurs. When in blossom the whole branch is transformed into a floral plume into which it is impossible to thrust a finger without touching a flower. The petals are reddish pink in the folded bud, white or delicately stained with pale pink when fully expanded. The fruit is tiny, dull greenish red and not showy. Its specific name is derived from the fact that in central China, where it is a feature of the thickets and margins of woods on the mountains, the peasants collect and dry the leaves and from them prepare a palatable beverage which they call red tea.

**Malus toringoides.** Like a Hawthorn in foliage, the leaves being deeply incised and lobed, though some of them are quite entire, and with fruit like a white heart cherry is *M. toringoides*, a newcomer from the mountain fastnesses of the Chino-Thibetan borderland. With its clusters of white flowers, produced with the unfolding leaves, the small, rather thorny tree is less attractive in blossom than many others but in fruit it is considered by some people the most beautiful of all the lesser Crabapples. It and the somewhat similar but smaller *M. transitoria* are the last of the Asiatic species to bloom.

In the Arboretum the Asiatic Crabapples are just opening their blossoms near the Administration Building, on the left hand side of the Forest Hills Road, and on the top of Bussey Hill. The main collection, however, is at the foot of Peter's Hill, and is best reached from South Street by way of the Bussey Street Gate.

E. H. W.



# ARNOLD ARBORETUM

HARVARD UNIVERSITY

## BULLETIN

OF

## POPULAR INFORMATION

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NO. 6

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**The Arboretum** is singularly lovely at the present time, a condition, it is true, shared by the countryside at large but peculiarly enhanced here by the presence of exotic trees and shrubs in rich variety. Enter its approaches where you will, beauty reigns on all sides. By the Jamaica Plain Gate the Asiatic Magnolias are squandering their petals around the Administration Building and large trees of *Malus floribunda* are wreathed in pink-tinted blossoms. Along Meadow Road the ruddy brown young foliage of *Cercidiphyllum japonicum*, the Katsura of the Japanese, is conspicuous and here and there the last of the Shadblows, *Amelanchier asiatica*, *A. sanguinea* and *A. amabilis*, enliven the scene. Within the Forest Hills Gate, Pears and Crabapples on the left are in full blossom and facing them are various double-flowered Japanese Cherries aglow with pink clusters. Beyond, the Forsythias still make a goodly show and so do the American Plums. In the Shrub Garden many plants are putting forth their blossoms, but the Oriental Quinces still dominate the scene. If entry be made through the Centre Street Gate the rapidly swelling buds on the Hickories attract attention on the right, and beyond the Oaks are pushing forth gray, yellow-green and pink-tinted leaves. The native *Crataegus arnoldiana* and other early-flowering Hawthorns are draped in white. Just around the corner on the left the blossoms of *Viburnum Carlesii* fill the air with the fragrant odor of cloves. Close by, its less dense habited sister, *V. bitchiuense*, is laden with pinkish flowers.

**Bussey Hill**, where the new and rarer plants from the Orient are quartered, is perhaps the most interesting place in the Arboretum at the moment. The double-flowered Japanese Cherries are opening their blossoms and the Azalea bushes are ready to explode into sheets of pink, yellow, salmon and flaming red. On *Berberis Dielsiana* hang tassels of yellow flowers, and Wilson's Pearl Bush, with its upright racemes of large white flowers, compels attention. From the Overlook itself looking toward the south, the Hemlock Grove looms majestic; westward across the Oaks, over and beyond the steely gray, misty, cloud-like clump of American Beech, Spruce, Fir, and Pine stand conspicuous. Everywhere wholesome scented air, opening bud, blossom, and

green grass—everything fresh and clean—the Arboretum in spring is rich in charm and beauty.

**Double-flowered Cherries.** On the grassy knoll of Bussey Hill the collection of double-flowered Japanese Cherries is opening its blossoms. Probably no group of small trees attract the public more than these Cherries with their rose-like flowers. With no group in the past have garden-lovers been less successful. In Bulletins of previous years it has been frequently pointed out that the seat of the trouble is the understock that has been used in grafting or budding these plants. It has been stated that the proper understock to use is the common Mountain Cherry of the Orient, particularly the Japanese form of this tree known as the Sargent Cherry (*Prunus serrulata sachalinensis*). This is the northern type and grows to a greater size than any other and, moreover, is the hardiest. Itself the parent of the best pink-flowered double Japanese Cherries, if used as a stock our gardens would enjoy a hardy, long-lived race which lovers of these plants crave. Unfortunately the Mazzard, Morello, Mahaleb and even the Common Plum are used by nurserymen as understocks for these Japanese Cherries. The result is that although sixty-five years have elapsed since the first double-flowered Japanese Cherries came to this country, even moderately good specimens are rarely to be seen. In past years the Arboretum has offered limited quantities of seeds of the Sargent Cherry to those who will apply them for the express purpose of raising understocks on which to work Japanese double-flowered Cherries. The offer is still open and these Bulletins will continue to urge this work for the benefit of American gardens.

**Origin.** The double-flowered Japanese Cherries are derived principally from two species. *Prunus serrulata* and its varieties, widespread in the Orient, is one; the other is *Prunus Lannesiana*, which is native of the warmer parts of Japan and whose derivatives are not quite hardy in the Arboretum. The greenish yellow Ukon and its quaint, green-striped sister, Grandiflora, both more curious than beautiful, are descended from this tender species. There are many others, some with large single or double white, others pale pink or white tinted pink, blossoms, all of which are fragrant. From Long Island south the descendants of this species are worth-while plants. For New England, the northern parts especially, it is the double-flowered forms of *P. serrulata sachalinensis* that are most suitable. The Japanese recognize a great many forms of this Cherry but for all practical purposes they may be reduced to a half dozen. The flushed pink changing to white Albo-rosea and its pink sister Fugenzo are two of the very best. Similar to Fugenzo is Kirin and the late-flowering handsome Kanzan. The pale pink Shogetsu and the pure pink Horinji complete our list. These and others may be seen laden with opening blossoms on Bussey Hill.

**Exochorda Giraldii Wilsonii.** In the Shrub Garden and on Bussey Hill large plants of this vigorous growing Pearl Bush are now rapidly opening their flowers. These are pure white, each one and a half inches across, and borne on erect six- to eight-inch long racemes. It is native of central China and has been growing in the Arboretum since 1907,



The double-flowered Japanese Cherry Shogetsu.

when seeds were received from Wilson. So far the plant has never suffered winter injury and it blooms more abundantly each succeeding year. It is a shrub of almost tree-like dimensions and easily the finest of the tribe. *Exochorda* is an Oriental genus, related to *Spiraea*, of which four species are known. The first discovered was *E. grandiflora*, which was sent from eastern China to Europe, in 1849, by Robert Fortune and is a very familiar shrub in gardens. North central China is the home of the pink tinted *E. Giraldui*. A third species, *E. Korolkowii*, widely known as *E. Alberti*, is native of Turkestan. Less floriferous than other species, it is one of the first shrubs to burst into leaf in the spring. All three may be seen in the Shrub Garden. A fourth species, *E. serratifolia*, native of Korea, is not in cultivation. A hybrid between *E. grandiflora* and *E. Korolkowii* has been named *E. macrantha*. It differs from its parents chiefly in its more upright habit and in having somewhat larger flowers, each with about twenty stamens. This may be seen in the border alongside Centre Street Path.

**Caragana arborescens.** *Caragana* is a genus of shrubs wide-spread from southern Russia eastward through northern Asia, and southward on the mountains of the Chino-Thibetan borderland to the Himalayas. A number of the species are among the hardiest exotic plants introduced into this country. As a hedgeplant in the northwestern states and northward into Saskatchewan, *C. arborescens* is indispensable for hedge and shelter planting. The flowers are pea-shaped, bright yellow in a majority of the species, pink in others. In the Shrub Garden a collection of about a dozen species and many varieties of this useful genus may be seen.

The typical *C. arborescens* is a tall, tree-like shrub of upright habit and clear, yellow flowers. There is a variety (*Lorbergii*) with elegant narrow grass-green leaves; another (*pendula*) is well described by its name, while the variety *nana* is a dwarf, stunted shrub with contorted branches. None are so useful as the type. Another species long known in gardens is *C. frutex*, which is an upright shrub some ten feet tall, with rich yellow flowers and glabrous, dull green leaves. A handsome variety of this species, also native of the Altai Mountains, is *xerophytica*, with slender branches forming a broad bush some five feet tall. A species from western China of dense, twiggy habit, and exceedingly floriferous, is *C. Maximowicziana*. Another Chinese species, named *C. chamlagu*, has comparatively large solitary flowers, yellow flushed with red. The Siberian *C. microphylla* is a shrub growing some ten feet tall, with long, spreading branches, while *C. pygmaea* is usually more or less prostrate; its slender stems forming a hummock-like mass a yard high.

**Rhododendron Schlippenbachii.** The blossoms on this lovely Korean Azalea are now open on the Bussey Hill. A sturdy bush of upright habit, bearing on naked twigs terminal clusters of large pale to pure pink blossoms. This is a very hardy and satisfactory Azalea. The Arboretum's experience is that it transplants from the open ground with less difficulty in the autumn than in the spring. E. H. W.

# ARNOLD ARBORETUM

HARVARD UNIVERSITY

## BULLETIN

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NO. 7

**Azaleas** are fast opening their blossoms in the Arboretum, forming drifts of brilliant colors here, there and everywhere; the finest display being on the western slope of Bussey Hill. Strictly speaking, Azaleas are referable to the genus *Rhododendron* and cannot be separated therefrom by any fixed characters of botanical value. For garden purposes, however, they are easily separable by their general appearance, their small, thin, and in case of the hardy sorts, deciduous foliage. The flowers of no other group of hardy shrubs present such a range of brilliant colors—white, pink, yellow, orange, salmon to flaming red and scarlet in tones of great purity and vividness. Many species are delightfully fragrant and all are abundantly floriferous. The first Azalea to flower in the Arboretum is *R. dauricum mucronulatum*, which opens its blossoms in April at the flush of early spring, the last is *R. viscosum*, blooming in July. In height of bush they average from 5 to 8 feet but with age may grow 10 or 15 feet tall; all are of shapely habit, branching freely and are usually broader than they are high. Some like *R. Vaseyi* are partial to moist places, others like *R. calendulaceum* flourish on dry banks. But they are all good-natured and easily adapt themselves to a variety of situations. They may be planted in full exposure or under the shade of trees. Most of them are ideal when associated with deciduous trees, especially Oaks, either on the fringe of woodlands or in glades. The flowers of Kaempfer's Azalea (*R. obtusum Kaempferi*) are apt to bleach in full sun and this Azalea is seen to best advantage under the overhanging branches of Fir or Pine. So far as is known none of the really hardy species are subject to disease of any kind, nor are they attacked by insect pests. They demand, however, a lime-free soil. In the Arboretum Azaleas have been very extensively planted and from the end of April until mid-July produce a rich display of color. The collection proper occupies the western slope of Bussey Hill, but there are groups among the Oaks, and clumps by the roadside and by the edge of ponds. As arranged these Azaleas give arresting bits of color in all sorts of unexpected places. Here and there a flame of orange or red, a patch of yellow, a drift of pink or a sheet of the purest white stands forth. In some places, hidden among other bushes, the exhaled fragrance leads a visitor to their discovery.

**Rhododendron yedoense poukhanense.** The first Azalea to blossom (*R. dauricum mucronulatum*) is now past flowering and so, too, is the Japanese *R. reticulatum*, with rich magenta-colored flowers. The lovely pink-blossomed *R. Schlippenbachii*, spoken about in the last Bulletin, is still in full blossom, and so is *R. yedoense poukhanense* on Bussey Hill. The latter is the common Azalea of Korea from the central parts southward and was first introduced into cultivation by the Arboretum as late as 1905. In gardens it is a densely-branched, round or flat-topped shrub from 1 to 4 feet tall and more through, with terminal heads of rosy purple flowers rich in delightful fragrance. It is partly or wholly deciduous and in the autumn the leaves are tinted orange to crimson. The double-flowered Yodogawa Azalea (*A. yedoense*), now frequent in gardens, is a monstrous form of this Korean Azalea.

**Rhododendron obtusum Kaempferi.** Kaempfer's Azalea is now aglow with blossoms. This is the common mountain Azalea of Japan, where it is abundant, from the extreme south far into the northern parts of the country, from sea-level up to 4000 feet altitude. It is a twiggy, much-branched shrub from 3 to 10 feet high, with unscented flowers varying in color from salmon to rich red. The flowers last longer and are seen to best advantage when growing in the partial shade of Conifers and other evergreen plants. In full sun their brilliance pales, the colors bleach and the blossoms fade more quickly. In Massachusetts this plant is wholly deciduous but further south the leaves are retained through the winter. Though discovered late in the 17th century this Azalea was not brought into cultivation until 1892, when Professor Sargent sent seeds to the Arboretum.

**Rhododendron Vaseyi.** Of singular elegance and charm is *R. Vaseyi*, whose star-shaped pure pink flowers are now expanding. Rather sparse in habit it loves a moist situation and is happiest near a pond or stream, where tall Willows or other deciduous-leaved trees break the sun's rays and the waters reflect its beauty. Though restricted in a wild state to the high mountains of western North Carolina it is perfectly hardy in Massachusetts. The typical form has pink flowers but there is also one with white blossoms.

**Rhododendron nudiflorum.** Familiar to many is the Pinxter Flower (*R. nudiflorum*), widespread in eastern North America from Massachusetts southward. This is an excellent garden shrub growing from 2 to 6 feet tall and densely set with thin branches bearing in profusion clusters of fragrant flowers, pale to crimson-pink in color, with lobes spreading from a slender hairy tube, the stamens and pistils outthrust. It thrives in any situation and never fails to put forth a wealth of blossoms. Two other species with pink and rose-colored flowers are the closely related *R. roseum* and *R. canescens*. The first-named is the most northern of American Azaleas, being found from Quebec south, while *R. canescens* is found from North Carolina south. Both are broad, irregularly branching shrubs from 4 to 15 feet tall, with fragrant tubular flowers opening before the leaves unfold.

**Rhododendron japonicum.** Sturdy of habit, with rigid ascending stems is *R. japonicum*, widespread on the mountains of Japan. This



Pink and fragrant *Rhododendron roseum*.

has broad, funnel-shaped flowers, each about two inches across, sweetly fragrant, and aggregated six to twelve together at the end of every shoot. The color varies from orange-red to flame red or almost red, and there is a form (*aureum*) with soft yellow blossoms. At its maximum this is a shrub ten feet tall and five feet through, but more usually it is from four to five feet high and as much in diameter. Vigorous of habit, free-flowering and perfectly hardy, this handsome Azalea deserves the widest possible recognition. Very closely related is *R. molle* from China, with rich, yellow flowers but less hardy. By crossing these two species the hybrid race of "Mollis Azaleas," of which "Anthony Koster" is a typical example, has been brought into being. Some of these are perfectly hardy and none more so than the handsome orange-yellow "Louisa Hunnewell."

**Rhododendron calendulaceum** is the Flame-Azalea of the Appalachian Mountains, and right well does it merit the name, for it is one of the most gorgeous of all American shrubs. All who have seen it growing wild extol its beauty, and we who know it in gardens are captive to its brilliance. The colors range from yellow through orange to scarlet, and the flowers, which have little or no fragrance, open with or immediately after the unfolding of the leaves. This Azalea grows naturally in open woods and by the side of water-courses, and may be any height from 4 to 15 feet, and as much through. In gardens it is not particular in the matter of site, but massed on a bank or in thin Oak woods it is most effective.

**Rhododendron luteum** is the Pontic Azalea, an old favorite in gardens under the name of *Azalea pontica*. Of Eurasian origin, this is a floriferous species of vigorous growth, from 6 to 12 feet tall, wide-spreading, with rigid branches and hairy oblong leaves. The flowers are exquisitely scented, clear yellow with outthrust stamens and pistil and are crowded together in clusters at the end of the shoots. This Azalea has been much used by the hybridist, and crosses between it and various American species have originated the polychromatic "Ghent Azaleas," without which our gardens would lack much early summer fragrance and color.

**Rhododendron arborescens.** Before the last flowers of the Flame Azalea have fallen those of *R. arborescens*, another Appalachian species, commence to open. This is one of the loveliest of all the American Azaleas with its large fragrant flowers, pale rose-color in the bud and the purest white when fully expanded. The stamens and pistil are exerted far beyond the spreading lobes of the tubular flowers, and being of a bright red-crimson color add much to the beauty of the blossoms. It is a much-branched shrub, from 8 to 15 feet high, with dark green leaves, lustrous above and pale below, and with the odor of new mown hay. Unlike the preceding species the leaves of this Azalea and the related *R. viscosum* are fully grown before the flowers appear.

E. H. W.



# ARNOLD ARBORETUM

HARVARD UNIVERSITY

## BULLETIN

OF

## POPULAR INFORMATION

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SERIES 3. VOL. I

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**American Crabapples.** As the blossoms of the last of the Asiatic Crabapples fall those of the American species begin to expand and fill the air with fragrance. There are some eight species and many varieties found from the neighborhood of the Atlantic seaboard west to Texas, Missouri and Minnesota. From Alaska to California a ninth species (*M. fusca*) is indigenous but this differs greatly in character and appearance from its eastern relatives. The American Crabapples are small trees with intricately placed branches and often spiny branchlets. They have lax corymbs of deep pink, fading to almost white, flowers, which appear after the leaves unfold, and emit an odor of violets. The fruit is flattened-round, greenish and usually clammy viscid. They are admirable trees for planting on the edge of woods, in glades or dells, and deserve to be more widely appreciated.

**Malus ioensis.** First of the American Crabapples to open its blossoms is the Iowa Crabapple (*M. ioensis*), the most western member of its group, found widely dispersed from Minnesota southward to Texas. It is a much-branched, round-topped tree, often 30 feet tall, with oblong-ovate leaves, woolly on the underside when young. The double-flowered form (*plena*), known as Bechtel's Crab, bears in great abundance pink, fragrant, rose-like blossoms, and is a firm favorite in gardens. Many people have been greatly disappointed by the sudden decease of this tree. In some instances Pear-blight has been the cause but generally it is due to the unsuitable understock used. It is the common practice to graft or bud Bechtel's Crab on the Common Apple, an understock manifestly unsuited to the purpose. To obtain healthy, free-growing, long-lived trees, Bechtel's Crab should be worked on seedlings of its parent species or on those of *M. coronaria*. Since these species fruit freely and are widespread there is no difficulty in obtaining seeds for the purpose. The reason that this has not been done in the past is probably due to the fact that custom has decreed the Common Apple understock for all sorts and conditions of the Crabapple family. So far as the American members are concerned when grafting or budding is necessary a native stock is demanded.

**Malus coronaria.** In size, habit of growth and general appearance, this species is very similar to the Iowa Crabapple, but differs in having the young leaves smooth on the underside. It is found from New York south to Alabama, and westward to Missouri, and has been known in cultivation since 1724. About 1900, a form (*Charlottae*) with large, semi-double flowers, was discovered near Waukegan, Illinois, which promises to rival Bechtel's Crab as an ornamental tree for garden use. Both *M. ioensis* and *M. coronaria* with other American Crabapples may be seen in the collection at the foot of Peter's Hill and on the left of the Forest Hills Road at its junction with Meadow Road.

**Enkianthus campanulatus.** Among the Azaleas on the top of Bussey Hill this shrub is opening its racemose clustered blossoms which hang beneath tufts of deep green leaves. On some bushes the flowers are flesh-color, on others salmon to reddish crimson; in one they are cream-colored. No two bushes appear to have exactly the same color flowers, but all are remarkably floriferous and the leaves assume brilliant colors in the autumn. This *Enkianthus* is a shrub of upright habit, widespread on the mountains of Japan where occasionally it forms a tree-like bush. In 1892 it was introduced into the Arboretum where it has proved perfectly hardy in exposed and wind-swept places; even in the Shrub Garden it has scarcely suffered winter injury. Like other members of the *Erica* family it demands a lime-free soil.

**Enkianthus perulatus,** better known under the name of *E. japonicus*, is a round habited shrub and a familiar object in almost every garden in Japan. Its natural habit is neat and compact, and no shrub takes on more brilliant hues of scarlet, orange and crimson in the fall. The flowers are pendent, urn-shaped, pure white and produced in umbels.

**Enkianthus cernuus rubens.** This species differs from others in having the corolla irregularly notched. The type has yellowish flowers striped with crimson and is not in cultivation in the Arboretum but *rubens*, with deep red blossoms, thrives. Another less ornamental species is *E. subsessilis*, which hails from the Nikko region of Japan. Though less handsome in blossom than other species its foliage is not one whit less brilliant in the autumn. *Enkianthus* is a small genus of shrubs, related to *Andromeda*, all natives of the Far East, where they are found on the Sikkim Himalayas and eastward through China to the mountains of Japan. So far only the Japanese species have proved hardy in this Arboretum. These are worthwhile shrubs, deserving of a place in every garden. The collection may be seen beneath the old White Pines on the top of Bussey Hill.

**Iberis Tenoreana.** A broad patch of this low-growing shrubby Candytuft is now in full blossom in the Shrub Garden. It is useful as a ground cover in sunny places but its greatest value is for the Rock Garden. The blossoms, produced in racemose clusters, are of the purest white. A related species (*I. sempervirens*) is also well established in the Shrub Garden and flowers later.

**Rosa Ecae.** A large bush of this Rose is now in full blossom in the Shrub Garden. The pale, creamy yellow, five-petalled flowers in which



White-flowered *Wistaria floribunda alba*.

glow masses of yellow stamens, are subtended by small, neat-looking leaves. This is a very hardy Rose, found wild from the wind-swept regions of central Asia westward to north-central China. Upright in habit, with abundant, red-barked, prickly stems, it makes a shapely shrub. It has been growing in the Arboretum since 1911 and has not suffered winter injury; neither has any of its branches died. Less showy in blossom than other yellow-flowered Roses, it is easily the hardiest and in some ways the best. From the middle of May, when the leaves first unfold, until the autumn when they change color and fall, the bush emits a delightful fragrance of Sweetbriar. It is just the Rose for a wind-swept corner near the windows of a living room or beneath those of a bedroom, where its wafted fragrance can be appreciated.

**Wistarias.** Unquestionably the most beautiful of all climbers hardy in cool, temperate regions is *Wistaria*, everywhere so deservedly popular and widely cultivated. The name *Wistaria* was given in 1818 by Nuttall, to an American plant (*W. frutescens*) in honor of Dr. Caspar Wistar, Professor of Anatomy in the University of Pennsylvania. The same year John Reeves, an officer of the English East India Company stationed at Canton, China, sent to England a climber which received the name of *Glycine sinensis*. In 1825, De Candolle correctly referred this plant to Nuttall's genus *Wistaria*. Today, and for many decades past, *Wistaria* and *Wistaria sinensis* in the popular mind have been synonymous. The Chinese *Wistaria* is native of eastern China and is not completely hardy so far north as Boston, Massachusetts. It requires some protection and this is usually afforded by planting it against houses, but even then in severe winters the flower buds are often killed.

In Japan's gardens, paintings and embroideries, a *Wistaria* bearing very long racemes of flowers is a familiar subject. This plant, widely known as *Wistaria multijuga*, is a garden form of the wild *Wistaria* of Japan (*W. floribunda*), and correctly should be called *W. floribunda* var. *macrobotrys*. The species is abundant on the margins of moist woods and especially in thickets alongside streams, ponds and ditches virtually all over Japan, and has racemes from one to one and a half feet long of pale purple flowers. In Japanese gardens forms with white and pinkish flowers are cultivated; also a purple-flowered form with racemes measuring as much as 60 inches. These plants are grown by the side of ponds, and enjoy an unlimited water supply during the time of flowering.

Seeds of the Japanese *Wistaria* were received in this country by Samuel Parsons of Flushing, in 1862, from Dr. George R. Hall. It is hardier than its Chinese relative, has slightly smaller flowers, which, opening later, are fragrant and equally beautiful. The white, purple and pinkish forms are all hardy, and may be grown against buildings, on trellises, or allowed to ramble at will over trees and bushes. There is also a form with ugly double purple flowers.

*Wistarias* are erratic in the matter of flowering, and if raised from seeds decades may pass before any flowers appear. They should be increased by grafts, layers or cuttings from flowering plants, since from such source plants three or four feet tall will blossom freely. Good soil and restricted root room are additional aids to success. E. H. W.

# ARNOLD ARBORETUM

HARVARD UNIVERSITY

## BULLETIN

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**Bussey Hill.** The Arboretum is rich in pleasant and alluring scenes, but at the moment Bussey Hill has pride of place. Masses of vivid blossomed Azaleas compel attention, indeed, the dazzling blaze of Kaempfer's Azalea (*Rhododendron obtusum Kaempferi*) almost hurts the eyes. Broad belts of Pinxter Flower (*R. nudiflorum*) and its fragrant, deeper colored relative, *R. roseum*, draw the visitor; beyond are sheets of yellow Pontic Azalea (*R. luteum*), and orange to fiery red *R. japonicum*. The Enkianthus are a wealth of nodding bells, white, salmon and reddish crimson. Cotoneasters, prostrate or broad bushes, 10 feet tall and more in diameter, are just opening their blossoms and very pleasing are *C. apiculata*, *C. nitens*, *C. divaricata* and others, their branches peppered with globular flowers which have rose-pink infolded petals. Other species, like *C. hupehensis* and *C. multiflora*, have conspicuous white blossoms in small flattened clusters. Many Barberries there are strung with yellow blossoms; some in hanging tassels, some in erect spike-like racemes, others with relatively large blooms, solitary or in few-flowered clusters. Prominent is *B. Vernae*, with rich yellow, grape-like panicles of small blossoms. Facing the Cotoneasters is a dense, rounded bush of gray-leaved *Lonicera syringantha*, whose lilac-purple clustered flowers emit the fragrance of Heliotrope. Other Honeysuckles and scores of other plants are coming into bloom in the Chinese Border, which rings the top of Bussey Hill, and the air is saturated with fragrant odors in which that of the Common Lilac plays an important part.

**Brooms.** Not least of the attractions on Bussey Hill is the collection of Brooms with pea-shaped blossoms of varying shades of yellow. The Brooms belong mostly to the genera *Cytisus* and *Genista*, and are a very useful class of free-flowering plants little known in American gardens. When rock gardens come into their own these plants will be in great request. The group is essentially European although a few members creep westward into Asia Minor and southward into North Africa. The species, widespread in Europe, are most abundant in the southern and southwestern parts. The family resemblance in habit of growth and in general appearance is very strong. They are twiggy

plants with a multitude of slender branches bearing in profusion yellow, white, pink or red-purple, but mostly yellow, blossoms. These are shaped like those of the Sweet Pea with a more boat-shaped keel, gay wings and flaunting standard. The leafage is small, often scant or quite wanting when the green shoots function in its stead.

**Their Propagation.** Several are prostrate in habit forming neat, hummock-like masses sprawling over the ground. These are ideal for planting on boulders or in the rockery. Others are compact bushes from 2 to 4 feet high, neat in appearance throughout the year. They are in abundant bloom from May until August, and most of them set seed freely. Seed is an excellent means of increasing these plants, but some are very susceptible to foreign pollen and several of the finest varieties have originated as chance hybrids. The hybrids must be propagated from cuttings, and this is a good method to practice with all of them. Firm, nearly ripe wood inserted in early August is best. Brooms do not transplant readily so this should be done when the plants are small. Nurserymen should maintain a stock of these in pots for such can then be planted with success at any season when the ground is not frozen.

**Soil and Situation.** Brooms and their kindred are sun-loving plants and perfect air and root drainage are essential to their well-being. A sandy loam from which the water can seep freely away is ideal. They do not object to the best of loam provided the subsoil is gravelly but are happy in quite poor garden soil. Their roots are furnished with nodules rich in nitrifying Bacteria and so they do not exhaust but, on the contrary, tend to enrich the soil in which they grow. They are excellent groundcovers, but are impatient of overhead shade except of a light character. Drought they really enjoy but a water-logged condition spells death. On account of their floriferous character many of them are short-lived. The taller sorts are apt to become straggly and untidy in appearance if not severely pruned. They bear the knife well and as soon as flowering is over can be cut back to maintain the desired shape and size. Provided they are given full exposure to sun and wind and good root drainage all of them can be grown somewhere on the Atlantic seaboard from Massachusetts to Georgia.

**Dwarfs.** For planting on sunny banks or on top of exposed rocks *Cytisus purgans*, *C. Ardoinii*, *C. Beanii* and *C. decumbens* are admirably suited. All four are prostrate with very numerous, slender radiating branches which form yard- to fathom-wide masses hugging the ground. The best is *C. Beanii*, a chance hybrid between *C. Ardoinii* and *C. purgans*, with large deep golden yellow flowers, borne single or in pairs from each joint of the previous year's growth. So freely does this plant blossom that scarcely anything but flowers is visible. It is quite hardy in the Arboretum but not so its part parent (*C. Ardoinii*), which has similar flowers. *C. decumbens* has bright yellow flowers clustered in sprays along the shoots. It is perhaps the most thoroughly prostrate of all the Brooms and in June is gay with blossom. *Genista pilosa* is splendid for bank and rockery. It grows only a few inches high and forms dense tufts several feet through.



The Altai Rose, *R. spinosissima altaica*

In June and July each shoot is crowded with clustered yellow flowers. A prostrate plant, with flattened winged stems and racemes of yellow blossoms in June, is *G. sagittalis*, which is both hardy and accommodating.

**Cytisus purpureus.** Forming tufted masses of stems from 10 to 24 inches tall there are several species of *Cytisus* and half a dozen of *Genista*. All are neat in appearance and in season abundant of blossom. A splendid member of the group is the Purple Broom (*C. purpureus*), which in late May is aglow with rose-purple blossoms. Its stems are a foot and a half tall, spreading into irregular-shaped mats a fathom wide. This is one of the most useful as well as most hardy of all Brooms.

**Cytisus elongatus** is a taller plant with shoots close packed with pale yellow flowers. One of the hardiest of the Brooms it is at its best in late May and June. Two other hardy species are *C. glabrescens* and *C. leucanthus*. In the last-named the flowers are cream color, borne in dense terminal heads; in *C. glabrescens* they are yellow, axillary and clustered.

**Early Roses.** The first Rose to open its blossoms is *Rosa omeiensis*, native of central and western China. This is a vigorous growing plant, with small fern-like leaves and 4-petalled blossoms shaped like a Maltese Cross, which are followed in late June by scarlet hips, each with a succulent stalk, orange-colored at the base. The stems of this Rose are covered with bristles and flattened, bright crimson, translucent prickles.

**Rosa Hugonis.** This most popular Rose is now opening its saucer-shaped flowers, and soon the stems will be arching sprays of blossoms and the bush a fountain of soft yellow. When thrifty and happy this is one of the most beautiful of hardy shrubs. It should be remembered, however, that the individual shoots of this Rose do not live forever. They die to the ground, and this has caused much disappointment to lovers of this Rose. Courage, however, may be taken in knowledge that if the plant be on its own roots, as it always should be, it will continue over a long period to send up each year stout shoots from the ground and maintain the Rose a long lived, neat shaped bush. The pruning of this and other Rose species consists in the removal of old and worn out canes.

**Rosa spinosissima altaica.** The Altai Rose is expanding its large pure white blossoms. This is one of the most beautiful of all hardy Roses and a fitting companion to *R. Hugonis*. It has been growing in the Arboretum since 1887, and beyond the cutting away of old canes has never required attention. Perfectly hardy and abundantly floriferous, it ought to be grown throughout the colder parts of this country. This, with *R. Hugonis* and many varieties of *R. spinosissima*, including the pale yellow flowered var. *luteola*, may be seen in the Shrub Garden.

E. H. W.



# ARNOLD ARBORETUM

HARVARD UNIVERSITY

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**Rhododendrons.** In the Arboretum June is Rhododendron time and by "Rhododendron" is meant the familiar group with large evergreen foliage. A few early sorts blossom in late May but from the beginning until mid-June is their real season in this part of the world. With their bold evergreen foliage and large clusters of handsome flowers Rhododendrons rank among the noblest plants found in the north temperate regions. In Bulletins of previous years much space has been given to discussing them. Unfortunately only a few species and a limited number of garden hybrids can be successfully grown in the Arboretum. In this connection it should be remembered that the latitude of Boston is about the same as that of Rome, Italy. The climate of the two places, however, is very, very different, yet it must be remembered that at the spring solstice the sun is equally high in the heavens in both places and its direct warmth equally great. Usually the ground hereabouts is firmly frozen until April and in consequence the roots of plants are unable to function. The sun's rays cause excessive loss of water from the leaves by transpiration and, since the roots are unable to draw moisture from the earth, the inner tissues of the leaf collapse and death ensues. The fact that New England has virtually no native broad-leaved evergreens indicates clearly that the climate is unsuited to the growth of such plants. Its unsuitability is further emphasized by the fact that, although the northern parts of the world have been ransacked in quest of plant material, very few broad-leaved evergreens have been found that are able to withstand the severe climatic conditions.

**Situation.** Bearing in mind the latitude and the strength of the sun's rays in March it should be obvious to thoughtful people that if they are to have any success with broad-leaved evergreens, and with Rhododendrons in particular, they must be planted in a situation protected from the morning sun; in other words a northerly or westerly slope should be chosen. In the Arboretum they are planted under the lee of Hemlock Hill, but even in this favorable position they suffer more or less every season. A cool acid or neutral soil rich in humus is demanded, and a mulch of Oak leaves is necessary throughout the winter. But the practice of heaping mulch upon mulch over a period

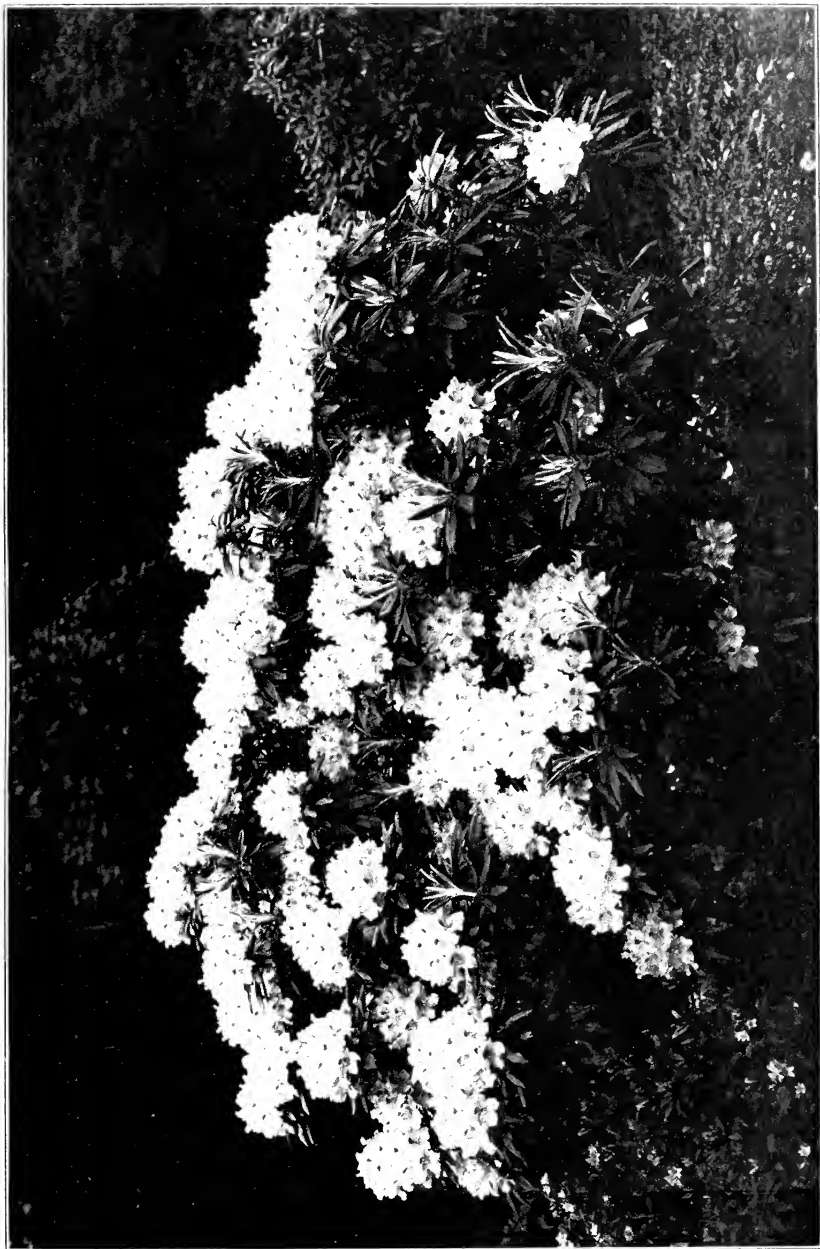
of many years is to be condemned, since rain-soaked leaves form a dense mat through which no air can penetrate and the soil in consequence becomes sour. Rhododendrons are surface rooting plants and their root system is a multitudinous network of fibres. Always near the surface roots should be fed and nurtured if healthy plants are to be maintained. From the fact that they have a fibrous root system Rhododendrons can be moved with safety up to almost any size always provided they be not allowed to suffer lack of water afterwards.

**The Lacewing Fly** in recent years has become a bad pest on evergreen Rhododendrons as well as on Laurel (*Kalmia latifolia*). This insect infests the under surface of the leaves and can be controlled by spraying with Sunoco Oil in the proportion of one gallon to seventy gallons of water applied after the Flies hatch out, which is usually about the end of May or beginning of June. The solution should be applied through a fine nozzle under strong pressure taking care that the spraying be done from below upwards. If the infestation is bad a second spraying should take place within ten days of the first. In August another spraying may be given to take care of stragglers hatching out a second brood. The third spray should be stronger (one to fifty).

**Hybrids.** Most of the evergreen Rhododendrons with bright colored flowers are hybrids of mixed parentage, but those which are hardy here have either the native *R. catawbiense* or *R. maximum* as the dominant part parent. A baker's dozen of the best of these hybrids is: with red flowers - Atrosanguineum, Charles Dickens, H. W. Sargent; with reddish flowers - Caractacus; with rose-colored flowers - Roseum elegans, Lady Armstrong; with pink flowers - Mrs. Charles Sargent, Henrietta Sargent; with dark purple flowers - Purpureum grandiflorum, Purpureum Elegans; with light purple flowers - Everestianum; with white or nearly white flowers - Album Elegans, Album Grandiflorum, Catawbiense Album. Earlier than these to blossom are the so-called Caucasicum Hybrids of which Mont Blanc, Boule de Neige, Coriaceum, Glennyanum and Cassiope, all with white or nearly white flowers, are growing in the Arboretum. More attention ought to be paid to the Caucasicum Hybrids since they are of good habit and very hardy.

**Species.** North America is poor in species of evergreen Rhododendrons. In western North America there is one, *R. californicum*, found from British Columbia to California but not hardy in the Arboretum. In eastern North America *R. maximum*, *R. catawbiense*, *R. minus*, *R. carolinianum*, *R. Chapmanii* and *R. lapponicum* complete the list. The last-named is a circumpolar plant which it has not been found possible to cultivate in the Arboretum; *R. Chapmanii* is not hardy. *R. maximum*, the Rose Bay, has handsome foliage, relatively small pinkish blossoms and is an excellent woodland plant. *R. catawbiense* is equally good in foliage and has larger flowers but the color is not so pleasing. *R. minus* has small pink blossoms rather hidden among the young growth.

**R. carolinianum**, the seventh, is a firstclass garden plant, hardy, free-flowering and easily accommodated. Of twiggy habit it forms a



Rhododendron Smirnowii.

loose more or less rounded shrub with compact clusters of medium sized flowers varying from white through shades of pink to rosy purple. Planted thickly and allowed to form masses it is most effective, flowering profusely in late May and early June. Like others of the group having gland-dotted leaves, *R. carolinianum* can be rooted from cuttings; also it is easily raised from seeds.

**R. Smirnowii**, native of the Caucasus, is the only exotic species of broad-leaved Rhododendron thoroughly happy in the Arboretum. This is a singularly handsome plant with stout branches and 6 inch-long leaves, dark green above and densely clothed on the under surface with a white felt of hairs. The flowers, large and produced in broad pyramidal clusters, vary in color from rose-pink in the bud to pale pink when fully expanded. The presence of a felt of hairs on the underside of the leaves renders this plant immune from the attacks of the Lacewing Fly.

**Laburnum Watereri**. On Centre Street Path a tree of this handsome Laburnum is now laden with golden-yellow blossoms in pendant racemes 6 to 8 inches long. This Laburnum is a hybrid between the so-called Scotch Laburnum (*L. alpinum*) and the common Laburnum (*L. anagyroides* better known as *L. vulgare*). The Scotch Laburnum is characterized by smooth, bright green leaves and long racemes of yellow blossoms, and is perfectly hardy in the Arboretum. A large plant may be seen on the right just within the Forest Hills Gate. The Common Laburnum, which has smaller leaves, grayish on the underside, and shorter racemes of blossoms, has not proved so satisfactory. The hybrid *L. Watereri* is intermediate in character between its parents, and, fortunately, partakes strongly of the hardiness of its Scotch parent. Laburnums are small trees, which bear in profusion pendant racemes of yellow flowers. The genus is interesting not only on account of its beauty, but as the only endemic genus of trees Europe boasts.

**Neillia sinensis**. Among the Chinese shrubs on top of Bussey Hill and also on Centre Street Path this pleasing plant is blossoming freely. Of twiggy growth, with arching, ascending-spreading branches, it makes a rounded bush from 4 to 6 feet tall. It has ovate, long pointed, coarsely toothed leaves with prominent stipules and terminal racemes of pink blossoms. Introduced from the mountains of central China in 1907, it has proved floriferous in the Arboretum.

**Asimina triloba**. Slender trees of this interesting American plant are in full blossom on Centre Street Path. Of foetid odor the nodding lurid purple flowers, each about 1½ inches across, are produced on the naked stems, usually singly from the axils of the previous year's leaves. The fruit is oblong-cylindric, from 2 to 6 inches long, with a thin glaucous, yellowish skin, and edible pulp. The plant suckers freely and the tendency is to form small groves. The Pawpaw, to use its Indian name, is widespread from New York to Florida and west to Nebraska and Texas. It is interesting as the only member of the large family *Annonaceae* (Custard Apples) that can be grown in north temperate regions. Most of the members are tropical and yield highly appreciated fruits.

E. H. W.

# ARNOLD ARBORETUM

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**Mid-June** is a season of blossom in great plenty on shrub, tree and vine. In the Shrub Garden, on Bussey Hill and along Centre Street Path, shrubs in rich variety are in full flower. At the base of Hemlock Hill the evergreen Rhododendrons are at their best, and just beyond the Kalmias are bursting into bloom. Here, there and everywhere blossoms shine forth and visitors may be assured of a feast of color no matter at which gate they enter the Arboretum.

**Rhododendron calendulaceum.** On the western slopes of Bussey Hill and amid the Oaks and Hickories broad masses or isolated groups of the Flame Azalea are now ablaze. This, the most gorgeous American Azalea, though not found wild north of Pennsylvania, is perfectly hardy in Massachusetts. It is a shrub, from 6 to 10 feet (sometimes as much as 15 feet) in height and breadth, which is easily accommodated in ordinary lime-free garden soil and in June produces clusters of flowers, rich yellow through shades of orange and red to orange-scarlet. The pleasantly fragrant flower has a slender tube, wide-spreading lobes and outthrust stamens, all uniform in color. The Flame Azalea has been extensively planted in the Arboretum, where at this season it forms arresting patches or broad thickets of blossoms. Being a good species it comes true from seeds, which is the best means of propagating it.

**Spiraea trichocarpa.** In the Shrub Garden and on Centre Street Path this Spiraea is blossoming freely. A shrub of dome-shaped habit some 4 to 6 feet tall and more in diameter, it has arching, angular stems furnished with prominent buds and elliptic-lanceolate leaves, dark green above, paler below, smooth and toothed at the apex only. The flowers are borne in 3- to 4-inch broad, compound clusters at the ends of short, leafy branchlets transforming the shoot into arching plumes and the whole bush into a fountain of white. Native of Korea, it is one of the Arboretum's introductions. Seeds were received in 1917 and the plants raised have proved perfectly hardy. It is a valuable addition to a useful group of shrubs.

**Spiraea nipponica**, better known as *S. bracteata*, is a shapely bush with the usual fountain-like habit of its tribe. The flowers, produced

in neat rounded clusters at the ends of short, leafy, erect branchlets, crowd the stems for several feet of their length. The umbels are dense and simple and rather prim in appearance. Native of Japan, this is the best *Spiraea* of its class from that country.

***Spiraea Henryi*.** As the two *Spiraeas* mentioned above pass out of blossom the flowers of *S. Henryi* commence to open. This is a vigorous growing species, native of the mountains of Central China from whence Wilson introduced it some twenty-five years ago. It makes a bush some 8 to 12 feet tall and has ascending-spreading stems, the outer ones arching over, clad with blossoms for 3 to 6 feet of their length. The leaves are gray and hoary on the under surface, deep green above with prominently impressed veins and are coarsely toothed in the apical part. The flowers are white, produced in compound clusters each from 3 to 5 inches broad. It is a perfectly hardy, vigorous growing shrub and like the two mentioned above must be included among the best half-dozen species of *Spiraea* in cultivation.

**Scotch Roses.** In the Shrub Garden several varieties of Scotch or Burnet Roses are now in full bloom. These are much-branched plants which sucker freely from the roots and form rounded billowy masses from 2 to 3 feet tall and 6 or more feet through. They have the old fashioned Rose fragrance, are exceedingly floriferous, and are very pleasing and accommodating shrubs. Of the semi-double named sorts flowering in the Shrub Garden attention may be drawn to *Dominie Sampson* with pink, *King of the Scots* with rose-pink, and *Iris* with cream-white flowers. These old-fashioned Scotch Roses are forms or hybrids of *Rosa spinosissima*. At one time a great many sorts were grown in gardens but the Hybrid Perpetual, Hybrid Tea and Rambler Roses have driven them out to the loss of those who love the simple and beautiful among Roses. The typical *R. spinosissima* is taller and more lax in habit and has single pink or white blossoms, each about an inch and a half across, which are followed by black fruits. There are many natural varieties of this Rose, the best of which is that of the Altai Mountains illustrated in Bulletin No. 9 of this year.

***Rosa Harisonii*.** So far as the experience of the Arboretum goes this is the best of the hardy, double-flowered yellow Roses. Originated about 1830 by crossing the Austrian Briar (*R. foetida*, better known as *R. lutea*), with the Scotch Rose (*R. spinosissima*), it soon became a great favorite and was carried far and wide in this country. It is a feature of many New England gardens as well as of those in the St. Lawrence Valley and west around Niagara and Lake Michigan. Perfectly hardy, each season it covers itself with a wealth of rich yellow blossoms. In the Arboretum it is an eminently satisfactory Rose whereas the Persian Yellow Rose (*R. foetida persiana*) and the double yellow Chinese *R. xanthina* do very poorly.

***Magnolia Watsonii*** is now in full blossom on the Centre Street Path and attracts attention unto itself by the heavy, spicy odor emitted by its blossoms. The flower is more or less saucer-shape, from 5 to 6 inches across, with sepals, pinkish on the outside, and cream-colored



Beauty-bush, *Kolkwitzia amabilis*

petals, in the centre of which is seated a prominent mass of reddish pink anthers, each on a blood-red filament. It produces flowers after its leaves are fully grown. The origin of this Magnolia is not known. It was sent to Paris from Japan in 1889. Some authorities consider it a hybrid between *M. obovata*, better known as *M. hypoleuca*, and *M. parviflora*. In Japan it forms a small tree, sometimes 20 feet tall, with a broad crown. In the Arboretum it is a straggling bush, of no particular shape, but free-flowering and quite hardy.

**Kolkwitzia amabilis** is now in blossom on Bussey Hill, in the Shrub Garden and on the left-hand side of the Bussey Hill Road, where a young and vigorous plant is flowering for the first time. Every succeeding year emphasizes the garden value of this plant for which the descriptive title of Beauty-bush has been aptly coined. It is a twiggy shrub, growing from 6 to 8 feet tall, with the inner stems erect or ascending and the outer ones arching to the ground, the whole plant forming a dome-shaped mass. The flowers are produced along the whole length of the branches in clusters at the ends of short, leafy shoots. They are tubular with a gaping mouth, deep pink without, stained with yellow-brown on the lower throat and lip. The pedicels and ovary are clad with spreading, white, bristle-like hairs which add to the attractiveness of the inflorescence. The graceful habit of the plant, its free-flowering qualities and pleasing color, combined with perfect hardiness, make this one of the most beautiful, as well as most useful, shrubs that China has given to the gardens of this country. It was introduced into cultivation by Wilson in 1902 and has been growing in the Arboretum since 1907. The parent plant on Bussey Hill has been much mutilated for propagating purposes, and from it, either by seeds or cuttings, has originated the whole stock of this plant in America. Related to the Weigelias or Diervillas, it is far more beautiful than any of them and is destined to become one of the most familiar plants in our gardens.

**Lonicera Korolkowii floribunda.** In the Shrub Garden this floriferous variety of the Persian Honeysuckle is now a thing of great beauty. Of twiggy habit, with a mass of gray foliage, and pink, gaping flowers, it looks from a distance like a cloud of mist shot with pink. A number of other Honeysuckles, including *L. Maackii* and its variety *podocarpa*, are in bloom. With pure white, gaping blossoms standing erect along the branchlets, *L. Maackii* is an attractive shrub. The type has the larger flowers but the variety is most handsome in fruit, which ripens late and remains in good condition until early December. Both are vigorous growing, tree-like, scarlet-fruited shrubs, perfectly hardy and reliable. On the trellis in the Shrub Garden the hybrid *L. prolifera* is opening its clustered heads of orange-yellow flowers. Like all its group it suffers from the attacks of aphids, and must be frequently sprayed with some nicotine solution. These Climbing Honeysuckles, of which *L. prolifera* is a type, are free-growing, useful vines which not only produce flowers in quantity but also heads of scarlet or orange-scarlet translucent berries.

E. H. W.



# ARNOLD ARBORETUM

HARVARD UNIVERSITY

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OF

## POPULAR INFORMATION

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NO. 12

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**Kalmia latifolia**, the Mountain Laurel, is the broadleaved evergreen par excellence for northern gardens. Native though it be, and strangely this is always a disadvantage, it has won the respect of garden lovers for the exquisite compelling beauty of its blossoms can neither be disputed nor ignored. A mass of restful green for eleven months of the year, in June an unmatched wealth of loveliness—a myriad flowers each artfully fashioned, burst into clouds of white and delicate pink. Beyond the collection of evergreen Rhododendrons and continuing around the foot of Hemlock Hill, the broad belt of Mountain Laurel is fast opening its blossoms. The border is several hundreds of yards long and there are groups on the opposite side of the road. In all more than a thousand large plants are laden with broad, rounded clusters of white or pink blooms, each a fluted chalice with stamens bent backward, tense and ready to spring forward and dust with pollen every honey-seeking bee. No flower on close inspection reveals more beauty of construction, and none in mass or individual cluster are more lovely.

**Varieties.** Man has done nothing toward adding to the beauty or variety of the Mountain Laurel, and the few different forms known are natural ones. On the right of the path which leads through the Kalmias to the top of Hemlock Hill and just where it begins there are several forms of interest to the curious. One (*fuscata*) has a chocolate band conspicuous within the cup, another (*polypetala*) has the corolla deeply cleft into narrow lobes, another (*myrtifolia*) is a dwarf with short leaves and small flower clusters, and another (*obtusata*) has broad, handsome blunt leaves. On the opposite side of the main roadway is a group of Sheep Laurel (*K. angustifolia*), low-growing, with dull, rosy-red flowers, and another of the Pale Laurel (*K. glauca*), slender of habit with purplish rose-colored, saucer-shaped blossoms.

**Sun-Roses.** Among the Barberries and Cotoneasters on Bussey Hill broad patches of Sun-Roses are a feature, and in the forenoon, star the ground with many-hued blossoms. For sunny positions these make excellent ground covers and in light, well-drained soil are much hardier than is generally supposed. The plants themselves are only a few

inches high but each shoot terminates in a 6-inch long raceme of blossom, white, yellow in many shades, orange, pink, rose-color, and varying shades of red to crimson. The Arboretum has been acquiring seeds of these plants under various names from different botanic gardens in Europe. Most of them are color forms of the common *Helianthemum nummularium*, better known as *H. vulgare*. A visit to Bussey Hill will speedily convince the garden-lover that for the rockery and as ground covers in sunny positions Rock Roses are a race of desirable plants.

**Potentilla tridentata** is another excellent ground cover. A suffruticose plant, it has a slightly woody rootstalk, ascending 6 to 10 inches high stems, terminating in loose clusters of white flowers. The leaves are lustrous, dark green, 3-foliolate and usually toothed at the apex, from which its specific name is derived. Planted in open, sunny situations, it spreads into a broad carpet.

**Potentilla fruticosa Veitchii**. This shrubby Cinquefoil with pure white blossoms is singularly like a wild Rose in general appearance. In the Shrub Garden it has been in full blossom for a couple of weeks and will continue to bloom intermittently until late autumn. Native of the higher mountains of central and western China, it is extremely hardy. The yellow-flowered *Potentilla fruticosa* is just opening its brightly colored blossoms. This is an excessively variable plant, widespread in pastures and rocky places throughout the boreal regions of the globe.

**Ceanothus ovatus** and its variety *pubescens* are now opening their white flowers in the Shrub Garden. These are much-branched shrubs of upright and spreading habit found wild from New England west to Nebraska, Colorado and Texas. The flowers are borne in small clusters at the ends of leafy shoots.

**Sophora vicifolia** is a loose, thorny shrub, varying in size from 2 feet to straggling bushes 8 or 10 feet tall and broad, with white, tinged with blue, pea-shaped blossoms. Widespread in China, especially in warm dry valleys and in the more arid regions generally, it is a free-flowering bush, but one that does not transplant readily. Nurserymen handling it should grow the plant in pots.

**Enkianthus subsessilis** is the least showy member of the family but is in bloom when the flowers of its relatives are past and on this account is valuable. It has terminal, hanging racemes of tiny yellowish-white, urn-shaped flowers. In the fall, like other members of the family, its leaves assume brilliant autumn tints; in this species yellow being the dominant note.

**Styrax japonica**. The large bushy tree on Centre Street Path of the Japanese Styrax is now fast opening a multitude of pure white, hanging bells. Though a very common tree on the edge of woods and thickets throughout Japan and introduced into this country as long ago as 1862 it is still rare in gardens. This is possibly due to the fact that it transplants badly and, like many other things, ought to be raised in



Mountain Laurel, *Kalmia latifolia*

pots. When properly established in a situation to its liking, it is one of the most beautiful of the lesser trees. It flowers in great abundance, sets seeds readily, and each year thousands of seedlings spring up from beneath the tree. On Bussey Hill there is a healthy specimen of the large-leaved *S. obassia*. This is a tree, or tree-like shrub, from 20 to 30 feet tall, with Witchhazel-like leaves and pendent, bell-shaped flowers arranged on erect racemes. The flowers, which are fragrant, open during the first ten days of June. It is more vigorous and more hardy than *S. japonica*, but unfortunately its blossoms are much hidden among the foliage. Both are trees of quality, which ought to be more widely known and more generally planted.

**Deutzias** are a group of June-flowering Oriental shrubs, deciduous, accommodating, abundantly floriferous, but alas! a little on the tender side in the Arboretum. However, several of the species and many of the hybrids do moderately well and a fair collection may be seen along the Centre Street Path; others in the Shrub Garden and on Bussey Hill. On the mountains of southwestern China, Abbé Delavay discovered a *Deutzia* (*D. purpurascens*) with white flowers, suffused with rosy purple on the outside. He sent seeds to Monsieur M. de Vilmorin in 1888, and some of the resultant plants passed to Lemoine, of Nancy. Apart from pink-tinted forms of *D. scabra*, all the *Deutzias* known at that date had white flowers and Lemoine proceeded quickly to make good use of his newly acquired treasure. He crossed it with all the species he could obtain and the results were remarkable. The hybrids secured gave to gardens a new race of *Deutzias* and completely altered our conception of the genus. Crossed with *D. Sieboldiana* Delavay's find yielded *D. elegantissima*, with flowers suffused with rose-color, its very similar form, *fasciculata*, and the white-flowered *arctuata*. More beautiful are the hybrids with *D. gracilis* to which the name *D. rosea* has been given. The type of the race has open, bell-shaped flowers, pinkish without and each nearly an inch across. Of the many forms of *D. rosea* mention may be made of *carminea* with flowers rosy purple on the outside, *eximia*, *floribunda* and *grandiflora* with pinkish flowers; the forms *campanulata*, *venusta* and *multiflora* have white flowers in abundance. The hybrid *D. rosea* crossed with *D. Vilmorinae* produced the upright paniced *D. carnea*, which has flowers pink without. Another race (*D. maliflora*), with flowers rosy purple outside, resulted from crossing *D. purpurascens* with the hybrid *D. Lemoinei*. The raiser gave the name *Fleur de pommier* to this cross and called one colored form *Boule rose*, and a white one *Avalanche*, all very descriptive titles. The handsomest of all the *D. purpurascens* hybrids, however, is *D. kalmiaeflora*, obtained by mating with *D. parviflora*. This is a graceful habited shrub with a multitude of flowers, pale rose-color on the inside, deeper without. All the hybrids of *D. purpurascens* are remarkable for their abundant star-like blossoms which are exceedingly pleasing both in the opening bud and expanded flower. On the whole they are hardier than their parent species, and all garden lovers owe a debt of gratitude to the illustrious Frenchman for these, not the least of his manifold gifts to gardens. E. H. W.

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# ARNOLD ARBORETUM

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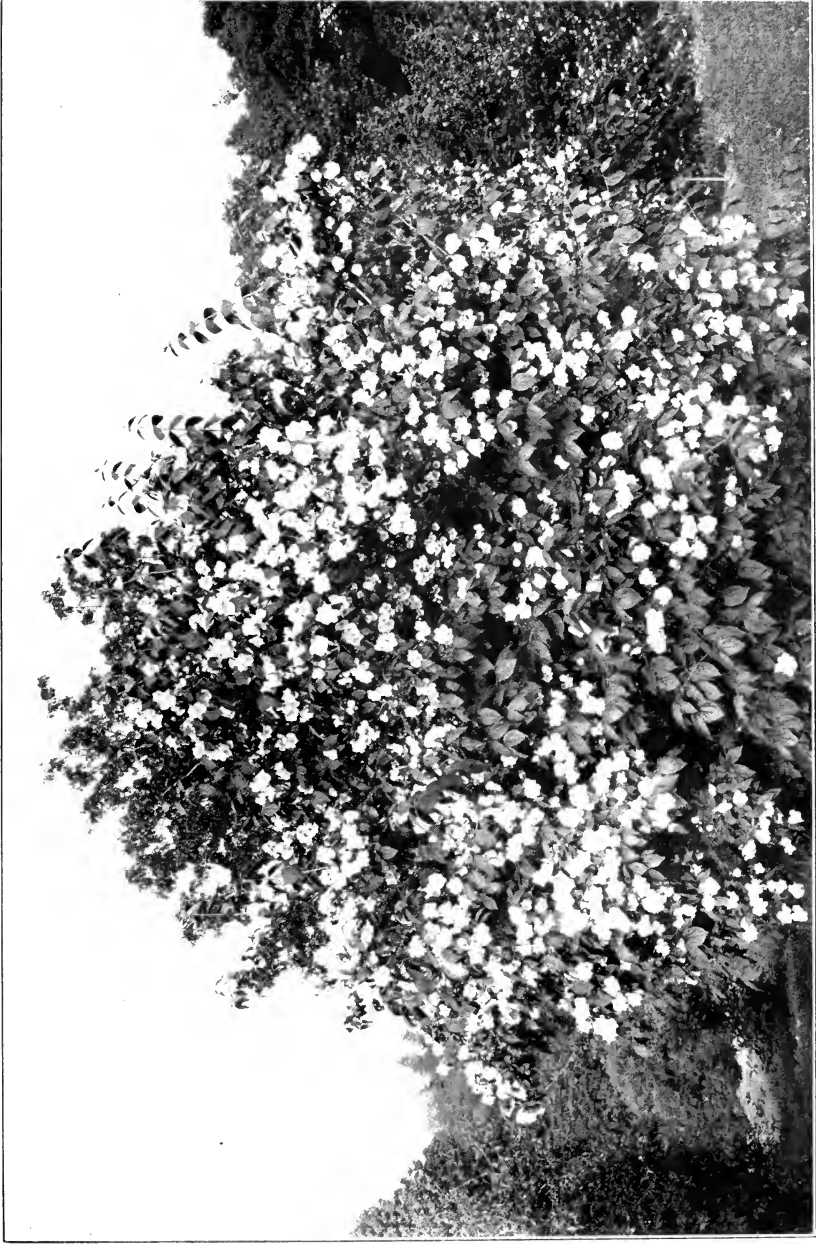
NO. 13

**Philadelphus** is a group of flowering shrubs that deck gardens in June with a cloud of white blossoms. The genus is found in the temperate regions of North America, Europe and Asia, and with the exception of one species all have white or yellowish white blossoms. The exception is the Mexican *P. Coulteri* and its hybrids, none of which is hardy in the Arboretum. What we may call the original member of the genus (*P. coronarius*) has been cultivated in European gardens from very early times. Native of southeastern Europe and Asia Minor, its strong fragrance probably made it a favorite among the Greeks and Romans. Later, when the Lilac was brought into cultivation, the two plants were confused under the name of *Syringa*. This confusion, which began many centuries ago, still exists in the popular mind. In Lobel's "Stirpium Historia," published in 1576, on page 540, *Philadelphus coronarius* is figured under the name of *Syringa italica* and the Lilac under the name of *Syringa caerulea lusitanica*. It is of the overpowering fragrance of *Philadelphus coronarius* that Gerard in 1597 complains and not of that of the Lilac. This fragrance is strongly reminiscent of orange blossoms, hence the common name of Mockorange. Tournefort in his "Institutiones Rei Herbariae," published in 1700, proposed the generic name of *Lilac* for the plant we now know by that name and that of *Syringa* for the plant we call *Philadelphus* or Mockorange. He figured them (t. 372 and t. 389) under these names so there can be no mistake as to his meaning. It is a great pity that Tournefort's names were not adopted since the confusion would thus have been ended forever. Unfortunately, in 1735, Linnaeus, on whose system modern classification is based, gave the generic name of *Syringa* to the Lilac and *Philadelphus* to that of the Mockorange. The European species remains today the most strongly fragrant of all the *Philadelphus*, although in beauty it is surpassed by a great many of its relatives. It is to be found here, there and everywhere in old gardens of New England, especially on Cape Cod, and it was probably one of the first plants brought to this country. It flowers during the first half of June and has cream-colored blossoms in erect, cymose clusters. A species very similar in habit, flower and fragrance is *P. pekinensis*, native of northern China. The first American species of *Philadelphus* to be cultivated in Europe was *P. inodorus*, a tall, much-branched shrub, often

15 feet high, with arching branches and large pure white flowers without any odor. It was cultivated by Philip Miller in the Apothecaries Gardens at Chelsea in 1738. Catesby in 1743 figured it (t. 84) in his "Natural History of Carolina," and states that the only tree of the kind he saw was growing on the bank of the Savannah River near its cataracts. Since those early days a large number of species have been discovered in this country and in Asia and introduced into gardens. Moreover, the hybridist has been busy with the result that a very great number of hybrids are in cultivation. The Philadelphus season extends over six weeks, from the last week in May to the first of July. In the collection facing the Lilacs and in the Shrub Garden some 112 species, varieties and hybrids may be seen growing.

**New Asiatic Species.** *Philadelphus sericanthus*, which was introduced from China about 1896, is remarkable for the odor of its blossoms which suggests that of Vernal Grass (*Anthoxanthum odoratum*) or even new mown hay. This is a large shrub, some 12 feet high, with ascending-spreading branches and short, racemose clusters of flowers, each not more than an inch across and facing downward. A related species with longer racemes and slightly larger flowers is *P. subcanus*, also from China. In this the flowers have the odor of Lemon-scented Verbena. Perhaps the most pleasing of the newer Chinese species is *P. purpurascens*. This is a spreading bush, some 6 to 8 feet in height, with arching stems crowded with ascending racemose clusters of flowers. The flowers suggest those of a Deutzia and are cupped, rather small, with purplish calyx and lemon-colored anthers and have the fragrance of Sweet Peas. The contrast between the calyx and the snow-white petals adds distinction to this plant.

**Philadelphus microphyllus.** From the garden point of view the most useful of all American species, as well as one of the most distinct, is *P. microphyllus*, native of Colorado, New Mexico and Arizona, but, unfortunately, scarcely hardy in the Arboretum. This is a shrub of graceful habit with upright and spreading branches, small, lustrous leaves and abundant white blossoms emitting the fragrance of Quince fruit. This species has been of immense value to the hybridist. Lemoine crossed it with *P. coronarius* and originated *P. Lemoinei*, of which a great many forms are now cultivated in our gardens. They are hardier than the American species, blossom in great profusion and rank among the most worthy shrubs. Many of them are fountain-like in habit and in season whole branches are transformed into plumes of blossom. Among the best known sorts are Avalanche, Mont Blanc, Candelabre, Erectus with single, and Boule d'argent with double-white flowers. The hybrid *P. Lemoinei* crossed probably with *P. insignis* gave rise to *P. polyanthus*, another very free-flowering hybrid of which Gerbe de neige, Pavillon blanc and Favorite are the best known examples. By intercrossing *P. Lemoinei* with some double-flowered variety Lemoine obtained *P. virginialis*, some forms of which are among the most popular of all Mock-oranges. All have more or less semi-double blossoms, borne several together and varying in size from 1 to 2 inches. Next to the type itself the best known sorts are Bouquet blanc, Glacier and Argentine. Crossed with *P. grandiflorus* or some related species, *P. Lemoinei* has



The handsome *Philadelphus splendens*.

given rise to *P. cymosus* with its many varieties of which we may mention Conquête, Mer de glace, Rosace and Voie lactée with single, Bannière with semi-double flowers, and the handsome Norma with single or double, cupped blossoms with wax-like petals. Some of the species of *Philadelphus* hybridize freely among themselves and several of the handsomest plants in cultivation have originated as chance hybrids. One of the first of these to attract attention was *P. insignis*, often called Souvenir de Billiard in memory of the man in whose garden it was found, which originated in France about 1870. Another handsome hybrid of unknown origin is *P. monstrosus*. One of the most vigorous growing of all Mockoranges, this forms a bush of tree-like habit, 15 to 20 feet tall, with ascending, somewhat spreading, branches and racemose-cymose flowers, each blossom  $1\frac{1}{2}$  inches across. Of the large-growing *Philadelphus* perhaps the handsomest of all is *P. splendens*, which originated as a chance hybrid in the Arboretum. It is possibly a cross between *P. grandiflorus* and *P. Gordonianus*. Whatever its parentage it is a magnificent garden plant, with stout, ascending-spreading stems, dark green leaves and bold ascending clusters of pure white flowers each  $1\frac{1}{2}$  to 3 inches in diameter, with prominent yellow anthers and a slight but pleasant odor.

**Rugosa Hybrid Roses** have a great future before them in the colder parts of New England since they combine great hardiness with handsome blossoms. The hardiness they get from the parent *R. rugosa*, a very old inhabitant of gardens, native of the northeast Asia littoral and abundant in Japan, where it is known as a Sea-tomato from the size and color of its fruits. Being a maritime plant it has special use for seashore gardens, and this combined with its hardiness give it a field of wide usefulness. Two Hybrid Rugosa Roses were raised in the Arboretum by the late Jackson Dawson. One, named Lady Duncan, obtained by crossing *R. rugosa* with *R. Wichuraiana*, is of trailing habit with glowing rose-pink blossoms. Another is *R. arnoldiana*, whose parents were *R. rugosa* and the Rose General Jacqueminot. The Arnold Rose is a bush with erect stems, good foliage, and large, rich red, single flowers. The parentage of the other Rugosa Hybrids is obscure. One of the first and best is Madame Georges Bruant, which has white, semi-double flowers appearing on the plant intermittently from summer until autumn. Handsome and distinct is Conrad Ferdinand Meyer, with large, clustered, semi-double pink flowers. A sport with white flowers is Nova Zembla. Blanc double de Coubert has clustered, semi-double, pure white blossoms. New Century has double, rose-pink flowers, and Roseraie de L'Hay dark red, fading to maroon, richly fragrant flowers, each 3 inches across. A trailing Rose with pure white blossoms is *R. Paulii*, better known as *R. rugosa repens alba*, and one of the handsomest and most distinct of these hybrids. Max Graff is of similar habit with pure pink blossoms and lustrous foliage. Lastly, mention may be made of F. G. Grootendorst, familiarly known as the Carnation Rose, with bright red, fringed petaled blossoms. This is a splendid subject for hedges round gardens by the sea. The roses named and many others may be seen in the Shrub Garden.

E. H. W.



# ARNOLD ARBORETUM

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NO. 14

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**July** has seldom found the foliage in the Arboretum looking more luxuriant than at the present time. Favored by a generous rainfall the shrubs and trees have made excellent growth. The Oaks and the Conifers in particular are looking their best. Catalpa and Linden trees, together with a miscellaneous variety of shrubs, are in bloom, and suffruticose Woadwax (*Genista tinctoria*) spears the grass with abundant yellow beneath Pine, Oak and Hickory. Alongside Bussey Brook, round the ponds and in the meadow in front of the Administration Building, bushes of the American Elder (*Sambucus canadensis*) are sheets of white. This Elder may be termed a coarse shrub, more fit for the edge of lake and woodland and wild places in general than for the garden proper, but none will deny that it is a striking subject. Each and every shoot terminates in a broad flat cluster of pure white flowers, and these are speedily followed by heavy masses of jet black fruits which hang in bunches from colored stalks. It has a place in large gardens and the countryside in July would be shorn of much beauty did it disappear. Another conspicuous native shrub just passing out of blossom is *Viburnum pubescens*, so abundant in Massachusetts and elsewhere. Its southern variety (*Canbyi*), which closes the Viburnum season of blossom, is now at the height of beauty. When given proper room to develop this is a broad, round-topped shrub, 18 feet high and more in diameter, each shoot terminating in a 4-inch broad, convex corymb of white flowers. It has larger flower-clusters and broader, thinner leaves than the type. Both have clustered, small, globose, blue-black fruits.

**Rhododendron arborescens** is flowering freely this season. On Bussey Hill are drifts of this Azalea; clumps are planted by the roadside just within the Centre Street Gate and elsewhere in the Arboretum. Truly this delightful shrub ought to be more abundantly grown. It is of shapely habit with twiggy branches forming a dense, rounded mass. The leaves are green on the upper side and gray beneath with conspicuous reddish petioles. The flowers, each 2 inches across, are tubular with spreading lobes, pure white or flushed with pink and borne several together in terminal clusters. The far outthrust crimson-pink stamens and pistil, with jet black stigma, are prominent features. Its fragrance of Honeysuckle is perhaps not so strong as in the related

Swamp Honeysuckle (*R. viscosum*) but it is a very superior garden plant. The Swamp Honeysuckle is also in blossom, scenting the air for some distance around. These two species bring to a close the Azalea season which opened in the Arboretum early in April with *Rhododendron dauricum mucronulatum*.

**Spiraea Veitchii** is the last of its group to blossom and one of the best of the whole Spiraea tribe. It is a tall growing bush with stems some 10 to 12 feet high, ascending and spreading, the outer arching downward and outward, forming a dome-shaped mass. The leaves are oval from  $\frac{3}{4}$  to 1 inch long, quite entire, dark green above and grayish on the underside. The flowers are produced at the ends of short lateral shoots in flattened cymose clusters, each from  $1\frac{1}{2}$  to 4 inches across, which are developed along the shoots for half their length. The individual flowers are small, of a deep cream color and have the odor of English Hawthorn. Bees find it a very attractive plant, judging by the number that visit the specimen on Bussey Hill and others along Centre Street Path. This Spiraea is one of Wilson's introductions from western China where it is a common plant above an altitude of 6,000 feet.

**Holodiscus discolor** is another summer flowering shrub noticeable at this time of the year. Closely related to the Spiraeas, this is a bush with arching branches and broad ovate coarsely toothed leaves densely clothed with gray tomentose hairs on the lower surface. The flowers are borne in large spreading, often hanging, paniculate masses which terminate lateral shoots. Native of western North America it was introduced into gardens in 1827 by David Douglas. The type now-a-days is less frequently seen than the variety *ariaefolius* which is distinguished by having leaves light green and merely pubescent on the under side. The plants flower in the utmost profusion and are exceedingly graceful in habit. They sometimes make bushes 12 feet high and as much as 40 feet through, thriving equally well in full sunshine or in the shade of thin woods. In books, *Holodiscus* is more frequently spoken of under the name of *Spiraea* from which genus, however, it differs in that the fruit capsule does not open to liberate the seeds. Specimens may be seen in flower on Centre Street Path and in the Shrub Garden.

**Deutzia longifolia** is in blossom among the Chinese shrubs on Bussey Hill. This appears to be one of the hardiest of the Chinese *Deutzias* and is certainly one of the best. The flowers vary in color from pale rose-purple to almost rose pink, and the broad, flattened stamen filaments are of the same color as the petals. This *Deutzia* is a shrub from 3 to 5 feet tall and as much in diameter, with oblong, lance-shaped pointed leaves, dark green, much wrinkled above and gray on the underside. The flowers, in clusters at the ends of short leafy shoots, are each from  $\frac{1}{2}$  to  $\frac{3}{4}$  of an inch across and the erect, much-flattened stamen filaments form a prominent corona in the center of the flower. Bulletin 12 told something of the Hybrid *Deutzias* raised by Lemoine. Bearing in mind the wonderful improvement he wrought with less noteworthy species, it is evident that hybridists of the future have in *D. longifolia* a plant rich in possibilities.



*Hydrangea paniculata praecox*

**Hydrangea paniculata praecox.** The familiar *Hydrangea paniculata grandiflora* with huge heads of white flowers has been planted in overwhelming quantities throughout the length and breadth of this country. This is a monstrous form of a variable shrub, common on the margins of woods and thickets throughout Japan—monstrous in that all its flowers are neuter and have conspicuous petals, a condition also found in the Snowball Bush. Although in no sense related, it is interesting to note that it is only in *Hydrangea* and *Viburnum* that heads of neuter flowers are known amongst hardy plants. The typical *H. paniculata* has pyramidal heads of flowers in which conspicuous 4-partite neuter flowers are thinly scattered. It is a much more handsome plant than the mop-like form so ardently cultivated in this country. An early flowering form, known as *praecox*, is just opening its blossoms in the Shrub Garden, and is a shrub well worth the attention of all interested in hardy plants. It blooms ahead of the type and is of vigorous habit with ascending stems each terminating in a graceful pyramid of blossom often more than a foot long.

**Leptodermis oblonga.** In the border along the Centre Street Path may be seen commencing to flower two small plants of this interesting ornamental shrub. It belongs to the family which includes the Button Bush (*Cephalanthus occidentalis*) and the Partridge Berry (*Mitchella repens*) but most of its woody members are tropical and very few can be grown out-of-doors in Massachusetts. This *Leptodermis*, the only species of the genus hardy in the Arboretum, is a twiggy shrub seldom exceeding 3 feet in height, with small, oblong leaves and dense clusters of flowers terminating in short shoots. The flowers are rich purple, tubular, each  $\frac{1}{2}$  inch long with short spreading lobes, and continue to open from now until early autumn. The plant is well suited for sheltered but sunny positions in the rockery.

**Lonicera Henryi** with pinkish purple, gaping flowers and black fruits would have little claim to be considered an ornamental plant were it not for the evergreen character of its foliage. On this account it is a most useful addition to the limited number of evergreen vines hardy in New England. Henry's Honeysuckle has oblong, lance-shaped leaves, each from 2 to 3 inches long, dull green above and lustrous on the underside. It is splendid for clothing walls or trellises or for rambling over rocks. The foliage is abundant and the plant is not weedy in habit or so luxuriant in growth that it cannot easily be kept within bounds. It may be seen on the trellis in the Shrub Garden and among the Chinese shrubs on the Bussey Hill.

**Cytisus supinus**, with capitate clusters of yellow flowers terminating each foot long shoot, is in blossom. In Bulletin 9 attention was drawn to the garden value of the various Brooms and those who visit Bussey Hill and the Shrub Garden at the present time will have ample proof of this. Conspicuous in both places are rounded masses of *C. nigricans* bearing a multitude of rich yellow blossoms. Of neat compact habit and absolute hardiness, this is one of the best of the subshrubs which blossom after mid-summer has passed.

E. H. W.

# ARNOLD ARBORETUM

HARVARD UNIVERSITY

## BULLETIN

OF

## POPULAR INFORMATION

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SERIES 3. VOL. I

JULY 16, 1927

NO. 15

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**Vines.** Two outstanding features of the New England countryside which impress visitors from Europe are the low abundant undergrowth of *Vaccinium* and related shrubs, and the rampant, jungle-like growth of vines. The latter give quite a tropical appearance to our thickets and woodland margins during the summer and early autumn months. Such a luxuriant tangle of climbing growth is unknown in Europe. Foremost among the strong-growing wayside climbers are different kinds of *Vitis*, such as the Fox Grape (*Vitis labrusca*), the Summer Grape (*V. aestivalis*), and the Frost Grape (*V. vulpina*). In the Arboretum vines of different sorts are freely used to cover walls and fences, and in the Shrub Garden a collection is maintained on a wire trellis supported by concrete posts. In these positions vigorous growing vines are seen to great advantage, but only those perfectly hardy can withstand such rigorous conditions. The Wine Grape of the Old World (*V. vinifera*) is too tender, but several oriental and a goodly number of American species thrive.

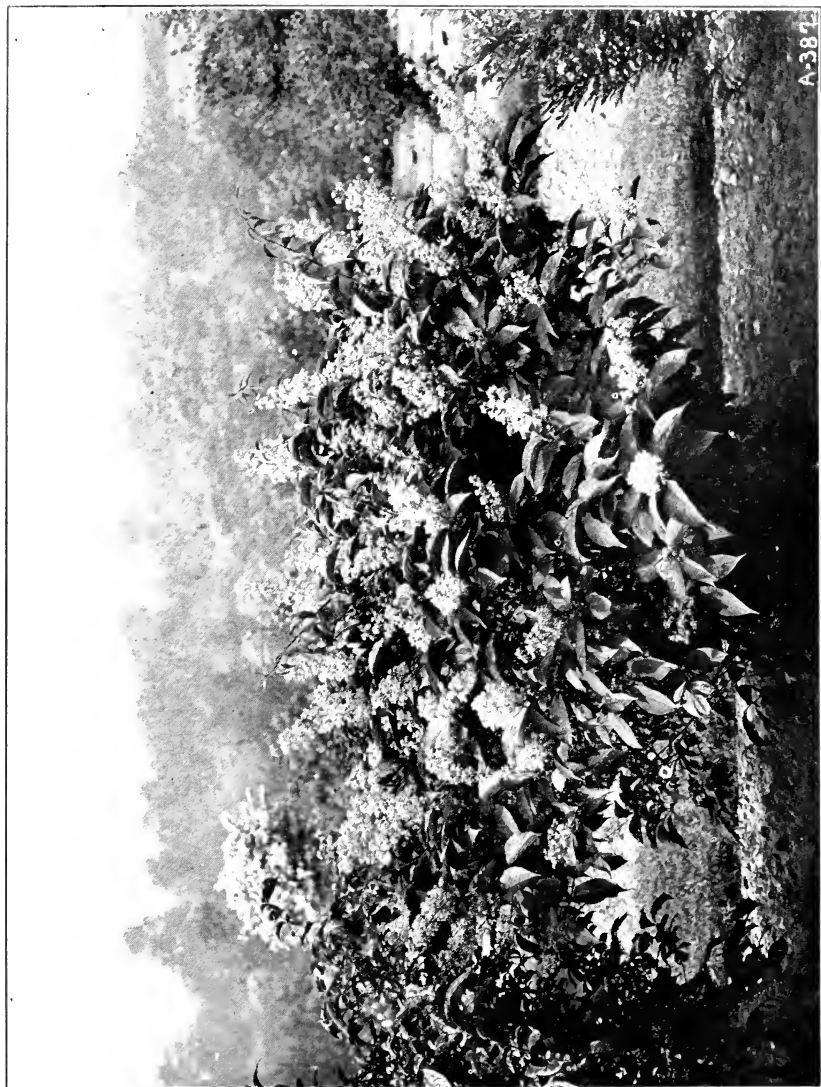
**Oriental Grapevines.** One of the noblest of all the Grapevines is the Japanese *Vitis Kaempferi*, better known as *V. Coignetiae*. This has broad, heart-shaped leaves, often more than a foot across, dark lustrous green and netted above, clothed on the underside with a felt of russet hairs. In the autumn the leaves change to brilliant scarlet and crimson and no vine is more striking in this respect. It is a very vigorous grower which in the moist forests of Japan climbs to the tops of trees 60 feet and more tall, and in thickets, glades, and the margins of woods and swamps makes an impenetrable jungle. The fruit is jet black, globose and edible, although harsh in flavor. It is widespread in Japan, especially in the colder parts. An equally hardy species, less vigorous in growth and with smaller leaves, is *V. amurensis*, widespread in eastern Siberia and throughout Korea. Another handsome species is the Japanese *V. pulchra*, similar in appearance to the Amur Grape but with red-veined and petioled foliage. Very distinct is *V. Davidii* with shoots densely clothed with prickles and large, metallic-green, heart-shaped, pointed leaves, each a foot long, pale on the underside and changing in the autumn to scarlet and crimson. Unfortunately it is less hardy than other Oriental Grapevines mentioned.

**American Grapevines.** On the trellis in the Shrub Garden no fewer than fourteen American species of *Vitis* have proved perfectly hardy. Among the handsomest are *V. cinerea*, *V. Leconteana* and *V. Doaniana*. The first-named grows abundantly on the riverbanks of the Mississippi Valley from Illinois to Texas. A vigorous plant, it has leaves dark green above, ashy gray below and, like the young shoots, clothed when they unfold with a felt of gray hairs. *V. Leconteana* or *V. bicolor*, with thick, trilobed leaves, each from 8 to 10 inches across, dark, lustrous above and glaucous below, is found from New Hampshire westward to the Mississippi Valley. A comparatively new species, native of the Texas Panhandle, is *V. Doaniana*. This is quite hardy in the Arboretum and is a first-class plant with large, pale bluish green leaves very firm in texture. Less vigorous, but very pleasing in habit, is the Sugar Grape (*V. Champinii*), with small, shining, metallic-green leaves and reddish shoots. For covering trellises, arbors and walls the native Grapevines are invaluable and their merits deserve wider recognition.

**Parthenocissus quinquefolia.** The Arboretum is often asked to name the hardiest of self-clinging vines suitable for growing against buildings. When the foliage alone is considered the answer is *Parthenocissus quinquefolia*, which is hardy as far north as Ottawa and clings to walls and buildings by means of discs at the ends of the tendrils. There are several varieties, the best being *murorum* and *Stint-Paulii*, with rather broad leaves, and *Engelmannii*, which differs from the type only in smaller leaflets. In the trade this climber is sold usually under the name of *Ampelopsis Engelmannii*.

**Ampelopsis aconitifolia.** This luxuriant, slender-stemmed vine with finely divided foliage is a favorite plant in gardens and this favoritism is well deserved for among climbers there is no more elegant plant. Its finely divided leaves are lovely throughout the summer months, although they drop in the autumn without marked change of color. The fruit, produced in slender hanging bunches, is at first somewhat bluish changing to orange or yellow when ripe. More beautiful is *A. brevipedunculata* and its variety *Marimowiczii*, with fruits changing from a pale lilac and coppery green to bright porcelain blue. Sometimes they are whitish, and on any one plant in autumn these different colored fruits may be seen. A handsome variety is *citrullodes*, whose finely divided foliage simulates that of *A. aconitifolia*. In gardens these plants are known generally as *A. heterophylla*. One is often asked how to distinguish between *Vitis*, *Ampelopsis* and *Parthenocissus*. Now all true *Vitis* have fibrous, shredding bark, whereas the other two have a firm compact bark that does not shred. The *Ampelopsis* climb by means of tendrils which have no discs at the tip, whereas in *Parthenocissus* the tendrils are furnished with adhesive discs. For adhering to walls or buildings it is always *Parthenocissus* that should be planted.

**Tripterygium Regelii** is a twining vine native of Korea and Japan, where it often scales to the top of the tallest trees. Of more than ordinary interest and beauty, this plant is deciduous and has spotted brown stems, the bark on the old stems exfoliating in layers. The



As a bush, *Tripteris reginae*.

leaves are large, broadly ovate, serrate and shortly acuminate, with reddish petals, bright green and somewhat wrinkled on the upper surface. The flowers are borne in terminal, thyrsoid panicles, each from 8 to 18 inches in length. The individual blossoms are small, multitudinous in number, emit the fragrance of new mown hay, and are speedily followed by white, bladder-like fruits. For its foliage, its flowers or its decorative fruits, this climber is well worthwhile. Planted against a trellis, wall, post or tree, it makes rampant growth and flowers profusely in mid-July. By pruning it can be grown as a bush in the same manner as the Climbing Hydrangea (*Hydrangea petiolaris*) can be fashioned. In bush form both these plants are distinctly pleasing, and the fact that they can be so grown gives them a double value in gardens. *T. Regelii* was introduced into cultivation in 1905, by the Arnold Arboretum, from seeds collected by J. G. Jack, near Seoul, the capital of Korea. The plant has never suffered winter injury nor from attacks of fungus or insect pests. Readily propagated by seeds, cuttings or from suckers, which are freely produced from its roots, there is no reason why this plant should remain rare in American gardens, where for those in the colder parts it can be thoroughly recommended.

**Spiraea virginiana**, native of Virginia, North Carolina and Tennessee, is a comparatively newly discovered species, introduced into cultivation in 1907. It is a slender stemmed shrub, growing about 4 feet high, with arching branches furnished with oblong leaves, entire or with a few teeth near the apex, dull dark green above, pale below, and broad, rounded, cymose clusters of white flowers. Flowering in July it is a useful addition to gardens. In may be seen in bloom in the Shrub Garden.

**Late Spiraeas.** Among the showy shrubs at this season of the year are various Spiraeas with pink to crimson colored flowers, many of which are of hybrid origin. An old favorite is *S. bumalda* "Anthony Waterer," a low growing shrub with abundant, yard high, erect stems, each terminating in a broad flattened cluster of bright crimson flowers. Another hybrid, with pleasing pink blossoms, is *S. Margaritae*. To obtain the best results from these and their kindred the plants should be cut to the ground each spring. A group with spicate paniced masses of pink or white blossoms terminating the shoots is represented by *S. tomentosa*, the Hardhack, so abundant in moorlands of New England, the St. Lawrence Valley and elsewhere. Distinguished by the gray or yellowish gray under the surface of its leaves, this plant has little garden value. More beautiful are the western species *S. Menziesii* and *S. Douglasii*, both with flowers of pleasing shades of pink. The white or pinkish blossomed *S. latifolia*, *S. alba*, and the Old World *S. salicifolia* also bloom at this season of the year and may be seen in the Shrub Garden.

E. H. W.



# ARNOLD ARBORETUM

HARVARD UNIVERSITY

## BULLETIN

OF

## POPULAR INFORMATION

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SERIES 3. VOL. I

JULY 30, 1927

NO. 16

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**Mahonia Aquifolium.** The season of flowers on tree and shrub is now fast approaching its end, and brightly colored fruits are beginning to display themselves. The Tartarian Honeysuckle (*Lonicera tatarica*) and its many varieties and hybrids are now laden with scarlet fruits, and here and there an orange-colored form is conspicuous. Particularly handsome in the Shrub Garden is the Oregon Grape, as *Mahonia Aquifolium* is commonly called. Unfortunately, this plant is none too hardy in the Arboretum, but last winter it suffered little damage and in the spring bore in great profusion paniced masses of rich yellow flowers. It is now laden with bloomy blue-black clustered berries suggesting bunches of small grapes, showing how appropriate is its common name. Native of western North America, where it is found from British Columbia to Oregon, this *Mahonia* has long been a favorite garden shrub. Its polished, pinnate foliage, dark green above and gray on the under surface, is handsome at all seasons of the year and during the winter months it is richly tinted crimson and purple. Where it can be grown there is no more handsome evergreen shrub of moderate height so suitable for making low masses under trees. More hardy is the dwarf *M. repens*, but its gray-green foliage is less attractive.

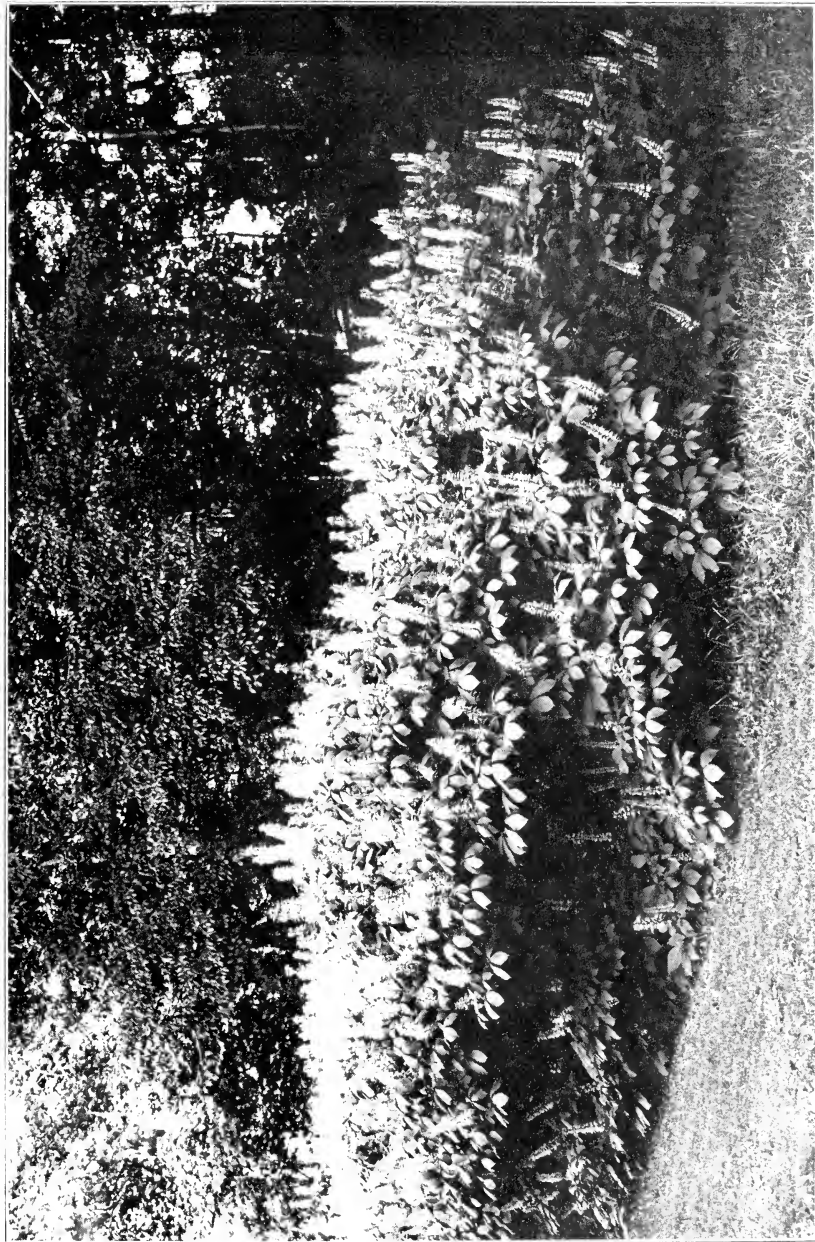
**Hypericums** are now in blossom in the Shrub Garden and in the border to the right of the Lindens entering from the path near the Administration Building. The half-dozen species that can be successfully grown in this climate are all shrubs of very moderate size, and by pruning can be kept as dense, rounded masses from 2 to 5 feet high. The stems and branches are clothed with thin, scaly red-brown bark and the flowers, freely produced at the ends of the shoot, are rich yellow in color with a brush-like mass of stamens the dominant feature. One of the most handsome is *H. prolificum*, found wild from New Jersey to Georgia and west to Iowa. Perhaps the most vigorous of the hardy species, it is characterized by its short-petioled, narrow-oblong leaves, each from  $\frac{1}{4}$  to 3 inches long, dark green and shining above. *H. aureum* is similar but smaller with larger flowers and bluish green leaves. Another species is *H. lobocarpum* with narrower leaves and smaller flowers in dense cymes forming terminal paniced clusters. These are less handsome than the large flowered Eurasian *H. calycinum* and

the hybrid *H. Moserianum*, so much planted in European gardens, but, unfortunately, not hardy in Massachusetts. This is much to be regretted, for no plants are better suited for forming ground-covers under trees than these St. Johns-worts. The Japanese *H. patulum* has not proved a success in the Arboretum, neither has its Chinese variety *Henryi* fulfilled expectations. Less hardy than at first supposed, it merely exists, which is unfortunate, for with its rich, butter-yellow blossoms, each 2 inches across, it is one of the handsomest of the whole tribe.

**Calluna vulgaris.** Heather is now opening its flowers and the different varieties will give a continuity of bloom until the end of August. There are white, pink, and crimson-purple forms, and many different habit types of Heather but all belong to one species. In many parts of the British Isles, and various districts of continental Europe, on open moor and hillside, Heather covers mile upon mile and in August forms one of the great floral displays of the year. The Scotchman's love of Heather is well known but he is not alone in his admiration of this lovely little plant. Heather is much more hardy than is generally supposed and may be grown successfully over the greater part of New England and other regions enjoying a similar climate, always supposing that lime be absent from the soil. It loves full exposure to sun and winds and must not be coddled. Clipping low in the spring results in a wealth of cheery, bright green, erect shoots which as August approaches are transformed into spikes of white, pink and red-purple blossoms. It is an excellent ground-cover but like other plants of this type does not transplant readily from the open ground. Propagated by cuttings or by seeds and carried along in small pots, it may be planted with success from spring until high summer. The secret of its successful culture is full exposure and an annual spring clipping. In districts where a decent snowfall prevails no winter protection is necessary, but where the snowfall is sparse a few Pine boughs should be thrown across the plants to break the direct rays of the sun in late February and March. Heather should be planted much more abundantly in New England, not only for its beauty, but as a ground-cover and mulch among Azaleas and other choice surface-rooting shrubs.

**Buddleia Davidii**, more widely known as *B. variabilis*, is one of the best late-flowering shrubs China has given to our gardens. It is not perfectly hardy in the Arboretum and the precaution is taken of rooting cuttings each autumn and placing out fresh plants in the spring. Severe pruning, a rich loamy soil, full sunshine and abundant water are the essentials for the success of this plant. The flowers are produced in tail-like masses which terminate each shoot, and when well grown, these may be anywhere from 18 to 30 inches in length. The color varies from pale to rich violet-purple. Of the varieties, *magnifica* with crinkled, slightly recurved petals and dark purple blossoms, and *superba* with a very dense inflorescence, are perhaps the best. A popular and very good form is that known as *Veitchiana*.

**Aesculus parviflora** is the last of the Buckeyes to blossom. Usually this happens about mid-July but this year it will be the first week of August before the flowers are fully expanded. Native of the south-



Last of the Buckeyes to blossom, *Aesculus parviflora*

eastern states, this is a broad, round-topped, much branched shrub some 6 to 10 feet high. Every branch terminates in a long, narrow, erect spike of small, white flowers in which the out-thrust stamens with pink anthers are conspicuous. This is an old plant worthy of greater attention than is now bestowed upon it. It requires a good soil and a moist situation, and is splendidly suited for massing on the edge of woods. It suckers freely and established clumps generally blossom in two tiers. A good example of this American plant may be seen on the edge of the Oak woods flanking the Buckeye collection on the right of Meadow Road.

**Clethra alnifolia**, the Pepperbush, is one of the most common as well as the most sweetly scented of native shrubs. Abundant in swamps, woodlands, and moist places from Maine to Florida, its blossoms fill the air with fragrance in late July and August. Unfortunately the leaves are too often disfigured by attacks of red spider, but this year the bushes in the Arboretum are clean and healthy. A second species, known as *C. tomentosa*, blooms later. Hailing from North Carolina and Florida this is quite hardy in the Arboretum and may be distinguished from the common Pepperbush by a covering of white hairs on the lower surface of the leaves. Another American species is *C. acuminata*, native of the southern Appalachian Mountains. This is not so attractive in blossom as the species already mentioned, but its polished cinnamon-brown stems make it singularly attractive in the winter season. The only other species grown in the Arboretum is the Japanese *C. barbinervis*. This has spreading inflorescences of pure white nodding flowers and is the first of the Pepperbushes to blossom. Widespread in Japan, in the Nikko region and elsewhere, it is often a bushy tree 30 feet tall. It is the handsomest of the Clethras hardy in New England.

**Acanthopanax ricinifolius** is one of the noblest trees of the cool, temperate regions. It occurs wild, scattered through moist forests from the extreme south to the limits of northern Japan, but is most abundant in Hokkaido, where it grows to a large size and specimens 80 feet tall with a trunk from 15 to 20 feet in girth are not rare. In Korea and central and western China it is also a valuable timber tree. In old trees the bark is gray and deeply furrowed, the branches thick and spreading to form a flattened or rounded crown. In young trees the branches are erect-spreading and both they and the trunk are armed with short, scattered, stout spines. The dark green leaves on long stalks are very like those of the Castor-oil plant (*Ricinus*), hence the specific name. Each branchlet terminates in a broad, flat compound cluster of white flowers which are rapidly followed by small, jet-black fruits. The large and handsome palmate leaves give this tree a tropical appearance, yet it is perfectly hardy and quick-growing and thrives in ordinary garden soil but prefers a moist situation. So far as is known it is not attacked by any insect or disease. A fine specimen about to burst into blossom may be seen by the pond near the Forsythias. E. H. W.

These Bulletins will now be discontinued until October.

# ARNOLD ARBORETUM

HARVARD UNIVERSITY

## BULLETIN

OF

## POPULAR INFORMATION

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SERIES 3. VOL. I

OCTOBER 15, 1927

NO. 17

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**The wet season** has suited the Arboretum splendidly; the trees and shrubs have made good growth and this is ripening well, thanks to a dry September. For the second week of October the foliage is everywhere remarkably green. There is color among the Maples and Hickories, the Asiatic Cork trees and the Flowering Dogwood, but trees and shrubs in general are late in assuming their usual autumn tints. Whether it will be a favorable season in this respect, it is difficult to say, but the Oaks ought to be exceptionally fine. Ornamental fruits are much fewer than usual and daily grow less through the gluttony of that voracious feathered alien, the starling. In flocks these birds descend on bush and tree and greedily devour every fruit. The Hawthorns are well laden with fruit but the Viburnums, Honey-suckles, and even Barberries are less freely dowered than is customary. Of flowers in the Shrub Garden there remain blossoms on *Buddleia Davidii* and its varieties, on *Elsholtzia Stauntonii*, and on the suffruticose *Chrysanthemum sibiricum* growing on Bussey Hill.

**Cotoneasters.** At the present moment Cotoneasters are the most attractive shrubs in the Arboretum. Many are fruiting very abundantly and the garden value of these shrubs becomes more evident year by year. A great many of the best are recent introductions from central and western China, and it would appear that, as a group, Cotoneaster is the best of the Wilson introductions into this country. Cotoneasters are Old World shrubs not represented in the flora of this continent. They are closely related to the Hawthorns, differing in having entire leaves and no thorns. The flowers are white or pinkish and have either small, upright or larger and spreading petals. They are borne

few or many together in clusters along the branches; occasionally they are solitary. The plants are in blossom from May until the end of June. In fall they are heavily burdened with red or black, rarely brown-purple, fruits either globose, oval or egg-shape, which in many species remain on the bushes with little loss of brilliancy far into the winter. Several boast fine autumn coloring. In habit of growth they present great diversity. Some like *C. Dammeri* are prostrate groundcovers, rooting as they trail over the soil; others are bushes of medium or large size. *C. microphylla*, *C. adpressa*, and *C. horizontalis* are especially well suited for the rockery or for planting on or against walls and stone work. A majority, however, are best as specimens on lawn and border where they have room to display to advantage their graceful habit of growth, their beauty of blossom and fruit. For cold parts of the country such as *C. lucida* and *C. acutifolia* are fine for making hedges. The red-fruited varieties especially are most decorative garden plants. Anyone interested in these shrubs should pay a visit to Bussey Hill, where a complete collection of the species and varieties hardy in this part of the world may be seen. Cotoneasters are lovers of sun and wind and demand full exposure to the elements; a well-drained situation, a loamy soil are other essentials, and if lime be present so much the better. A weak point about the family in general is that they do not transplant readily from open ground, especially the low-growing varieties, but, if pot-grown, dwarf Cotoneasters can be transplanted with assured success at almost any season of the year. The larger growing species are less particular.

**Cotoneasters for Flower and Fruit.** The great decorative value of Cotoneasters in general lies in their fruit but there are several whose beauty of blossom rival that of Spiraeas. Three of the best of these are *C. racemiflora* var. *soongorica*, *C. hupehensis*, and *C. multiflora*, all of which have flattened clusters of white, Hawthorn-like flowers borne freely all along the stems. The first-named has rigid branches arranged to form a broad, rounded bush from 6 to 10 feet high and more in diameter, gray-green foliage owing to the presence of a covering of hairs and large, coral-pink fruits. If the gray-green leaves do not afford sufficient contrast to show off the flowers to advantage, ample amends are made in September when the whole plant is necklaced in coral pink. The fruit is relatively large and so abundantly produced that the stems appear as ropes of beads. The fruit ripens early and falls before the winter sets in but throughout September the bush is conspicuous from afar. The others (*C. hupehensis* and *C. multiflora*) have dark green leaves and whip-like, arching and spreading branches which form fountain-like masses of white in early summer; in the autumn they are strewn with crimson fruits. Both are very hardy, free-growing shrubs from 8 to 10 feet high and from 10 to 15 feet through. Combining the qualities of abundant blossom and wealth of brilliant fruits, *C. racemiflora* var. *soongorica* and *C. hupehensis* may be accounted two of the most valuable shrubs that the Arboretum has introduced into gardens.

**Red-fruited Cotoneasters.** Deservedly the most popular of red-fruited Cotoneasters is the Chinese *C. horizontalis*, characterized by its flat,



The Red-fruited *Cotoneaster bullata* var. *floribunda*.

sail-like or frondose branching habit. In climates rather milder than that of New England it is sub-evergreen, but it is quite hardy although fully deciduous north of Massachusetts. In the open border it makes broad, hummock-like, irregular masses a yard high possessed of much character in habit. Planted against a wall—stone for preference—it can with little difficulty be trained to form a close screen. Placed on top of low walls it grows into an irregular thicket of singular charm. The flowers are abundant, pinkish but not conspicuous; its fruits are about the size of a pea, bright red to scarlet and brilliantly jewel the branches in the dullest of winter days. Beside the type there is var. *perpusilla* with smaller leaves, and var. *Wilsonii* of more even, although loose, habit of growth. Topping a boulder in the rockery or planted in a crevice and allowed to spread itself at will *C. horizontalis* and its forms rank among the most useful, pleasing and decorative shrubs gardens possess. *Cotoneaster apiculata* with intricately placed, closely overlapping branches forms mounds a yard high and is now studded with lustrous bright scarlet berries. It has rather thin, roundish, dark green leaves and is well-suited for planting among rocks. A closely related and equally delightful species is *C. adpressa* of tufted habit with larger leaves and fruits. *Cotoneaster divaricata* is of the medium-sized species, one of the best. It forms a wide-branched, densely twiggy bush from 5 to 6 feet tall and much more in diameter, and is now profusely laden with dark scarlet fruits. It has small, oval, dark green leaves which before they fall assume brilliant shades of crimson. A handsome shrub with arching, spreading branches and clustered scarlet fruit in abundance is *C. Dielsiana*, or *C. applanata* as it is also called. This will grow full 10 feet tall and as much through with branches arching over to the ground. There is a variety (*major*) with larger leaves and another (*elegans*) with coral-red fruits and sub-evergreen foliage. Another fine species is *C. Zabelii* which has slender branches, dull green leaves and bright red hanging fruits. This is a broad shrub growing some 6 feet high and its foliage turns bright yellow in the autumn. More pleasing than the type is var. *miniata* with orange-red fruit. The tallest of the red-fruited Cotoneasters is *C. bullata* and its varieties, *macrophylla* and *floribunda*, which grow into broad, round-topped bushes from 8 to 10 feet high. The branches are gracefully arching, the leaves deeply wrinkled, especially in var. *floribunda*, which ripens its fruit rather later than var. *macrophylla*. Both have lustrous, bright scarlet fruits in clusters along the branches.

**Black-fruited Cotoneasters.** The black-fruited Cotoneasters have less garden merit than their brethren with red fruit, but *C. moupinensis* and *C. foveolata* are worthy of a place on account of their orange to scarlet autumn-tinted foliage. These are hardy, vigorous shrubs growing from 10 to 12 feet tall and as much in diameter, with abundant clusters of black fruits. Slender arching stems, lustrous leaves and jet black fruits characterize *C. nitens* and *C. tenuipes*, recent acquisitions from western China. For the middle states and colder parts of the country in general *C. melanocarpa*, *C. acutifolia* and *C. lucida* with clustered black fruits are to be recommended. Also they have much merit as hedge plants, being of shapely growth withstand clipping well and are of iron constitution.

E. H. W.



# ARNOLD ARBORETUM

HARVARD UNIVERSITY

## BULLETIN

OF

## POPULAR INFORMATION

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SERIES 3. VOL. I      NOVEMBER 10, 1927      NO. 18

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**Autumn Foliage.** At the autumn season of the year brilliantly colored foliage attracts the eye on all sides. The Maples, Hickories and other trees, whose leaves color early, have shed their foliage but the Oaks, the noblest group of trees in eastern North America, are now at their height of glory, being later this year than is usual. The Scarlet, Red and White Oaks take on ruddy tints varying from reddish purple and crimson to red. The Black, and Swamp Oaks develop imperfect shades of orange to leather-brown tints. All the Oaks hold their autumn-colored leaves longer than other trees and often we enjoy their color from mid-October to mid-November. Where deciduous-leaved trees are associated with Conifers, the landscape effect in the autumn is immensely heightened. The contrast between the brilliant tinted foliage on the one hand and the dark green of the Conifers on the other is very impressive. One is often asked the why and wherefore of autumnal tints—a simple question not easy to answer, but briefly the metamorphosis is effected as follows: At the approach of winter leaves, which cannot withstand frost, cease to function as food factories and the residue food substances are conveyed from the leaf-blade into the woody branches and there stored, chiefly in the form of starch, until the season of growth recommences the following spring. The leaves from which everything useful has been transported form nothing more than a framework of cell-chambers containing waste products, such as crystals of calcium-oxalate, which are thrown off with the leaves and help to enrich the soil. But while the process of food evacuation is going on other changes take place. In many plants a chemical substance, known technically an anthocyanin, is produced in the leaves and often to technically as anthocyanin, is produced in the leaves and often to such an extent as to become plainly visible on the exterior. In the presence of free acids in the cell-sap it appears red, blue when no acids are present, and violet when the quantity of acids is small. In a great many leaves the chlorophyll bodies, which contain the green coloring matter, become changed to yellow granules. Sometimes these yellow granules are few and anthocyanin is absent, then the leaf except losing its freshness exhibits little outward change before it falls. In others the yellow granules are abundantly developed, and if anthocyanin is absent or nearly so the whole leaf assumes a clear

yellow hue. If there is an abundance of yellow granules together with free acids and anthocyanin the leaf assumes an orange color. Thus the leaf at the period of autumnal change by the presence of these substances in a greater or lesser degree loses its green hue and becomes brown or yellow, crimson or orange, purple or red.

**Tsuga caroliniana.** In these Bulletins attention has been frequently called to this magnificent Conifer. Each year its merits become more and more apparent. The dark green of its foliage is restful at any season of the year and the hummock-like arrangement of its branches give it much character. It is certainly, as a specimen, among the most beautiful Conifers that are hardy in New England.

**Witch-Hazels** have the distinction of being the last shrubs to blossom in the autumn and the first to put forth their flowers in the spring. Indeed, it is sometimes possible to find flowers on the common Witch-Hazel (*Hamamelis virginiana*) at Christmas and opening buds on another American species (*Hamamelis vernalis*) early in the new year. The flower-buds in all the species are formed early in autumn and are strung along the stems in clusters, each of which singularly resembles the pad of a pussy's foot. They are good shrubs for planting in close proximity to the house and are excellent subjects for town gardens. They do not object to smoke, dust and draught of streets and give a display of blossoms long before other shrubs. The genus is confined to eastern North America, Japan and China. In all half a dozen species with several varieties are recognized and of these four species and six varieties are growing on Centre Street Path and by the pond near the junction of Meadow and Forest Hills Roads. At this season of the year the common Witch-Hazel (*H. virginiana*) is everywhere a feature in the open woods and thickets, where its clear yellow foliage is conspicuous. As the leaves fall the star-shaped blossoms become apparent. A strong growing bush, it is very much like a Hazelnut in habit and often 15 to 20 feet tall and as much through. On account of its robust growth it is the least desirable for the garden, the town garden especially, being better accommodated on the margins of woodlands. As a rule the flowers are not so abundantly produced as in other species although on occasions the common Witch-Hazel produces its blossoms in the utmost freedom. Different bushes open their flowers at different times and it is possible in stretches of woodland to find it in bloom from mid-October to mid-December. This species has a very wide distribution, being found from Canada south to Georgia, west to Nebraska and Arkansas. There is a variety in which the petals are stained with reddish brown and, curiously enough, a similar color variation appears in another American species and in the Japanese *H. japonica*.

**Hamamelis vernalis.** A better specific name for this would have been "*Hiemali*" since it flowers in the winter rather than in the spring. This is a shrub with upright branches growing from 5 to 8 feet tall and suckering freely from the base forms a broad clump or thicket.



Carolina Hemlock (*Tsuga caroliniana*)

It is native of the gravelly river banks and beds of Missouri, Louisiana and Oklahoma and was introduced into cultivation by the Arboretum so recently as 1908. The Vernal Witch-Hazel has smaller flowers than the other species but is the most floriferous of all. The curiously jointed strap-shaped petals are contractile. It has blossomed in the Arboretum as early as January 6th and at any time during that month a warm spell of weather will cause the blossoms to open. If the temperature falls suddenly the petals contract and become infolded. On the appearance of mild weather they open and with falling temperature fold up again. It is rather interesting to watch the game of hide and seek the petals of this Witch-Hazel play with Jack Frost. The typical plant has light yellow petals, reddish towards the base. There is another form, not yet named, of which the petals are deeply suffused with reddish brown. Another variety, *tomentella*, has leaves more densely hairy and glaucescent on the under surface. For its abundance of blossom and its early flowering qualities this Witch-Hazel ought to be freely planted in the town gardens of New England. The flowers emit a delightful spicy odor of almonds.

**Hamamelis japonica.** This Japanese species is similar in habit to *H. virginiana* and grows to an even larger size, being sometimes 25 feet tall and as much in width. The flowers are larger and more abundantly produced than is usually the case in the common Witch-Hazel. They appear early in March. In the type the petals are clear yellow and the cupped sepals are usually purple on the inside. A variety named *arborescens* is of tree-like habit with golden yellow petals, calyx deep purple on the inside and purple anthered stamens. Another variety, *Zuccariniana*, also of tree-like habit with the branches more ascending than in the type, has lemon-yellow petals and the calyx greenish yellow within. A third variety recently introduced from Japan and named *flavo-purpurascens* has more or less reddish brown petals but this is not of much garden value.

**Hamamelis mollis** is a Chinese species and the best of the family. It has larger flowers with broad petals, golden yellow except at the base which is reddish. The leaves are strongly veined and densely clothed with soft woolly hairs on the underside. It is native of the Yangtze Valley region of east-central China, being common in open woods and thickets from the Hupeh province eastward. All the Witch-Hazels are hardy and may easily be propagated by grafting on *H. virginiana*.

These Bulletins will now be discontinued until April of next year.

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