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As winter grudgingly gives way to spring, beauty of bark and bud is much in evidence in the Arboretum. Indeed, the twigs of many shrubs and trees have been aglow with color throughout the winter, some like the Seashore Rose (*Rosa virginiana*) being now much less brilliant than they were in January. Of all the shrubs with ruddy twigs none surpasses the crimson-stemmed Red Osier Dogwood (*.Cornus stolonifera*), a common plant widespread through the northern regions of this continent; throughout the winter, even as at the present moment, the group planted on the bank of the small pond on the left of Meadow Road has been a brilliant splash of color. To get the best from this shrub in ornamental planting the oldest wood should be cut completely away each spring, leaving only the one and two year old stems. By this treatment the plant is not only kept within proper bounds but induced to display its most fiery tints. Its yellow-stemmed variety (*flaviramea*) makes an excellent companion. The Siberian relative, *C. alba*, though similar in habit is much less brilliantly tinted and, therefore, not so ornamental a shrub. The European *C. sanguinea* is also inferior in the color of its twigs but makes amends in the autumn by its dark, vinous purple foliage. Yet another useful member of this Red Dogwood tribe is the green-stemmed *C. sanguinea viridissima*.

Among green-stemmed plants none is better than the Oriental *Kerria japonica*, long a favorite in gardens. In marked contrast to these smooth-stemmed shrubs are some of the Honeysuckles, noticeably *Lonicera Ferdinandii* and *L. gynochlamydea*, and such relatives as *Kolkwitzia amabilis* and *Dipelta floribunda*, whose bark is shaggy and hangs in gray, papery strips.

The bark of the majority of trees is more or less gray, on some dark and even sombre. There are, however, many exceptions. The steel gray of the Beeches is only slightly less conspicuous than the white bark of the Silver Birches and almost rivalling that of the Beech is the bark of the Red Maple. On many of the Cherries the bark on the
stems and branches is the color of polished mahogany. Even more remarkable is the cinnamon-brown, papery bark of *Acer griseum*, a recent introduction from central China, of which a fine specimen may be seen on Bussey Hill. On the Plane or Button trees (*Platanus*) and on *Parrotia persica* the trunks and main branches are mottled gray and white. The twigs of the Golden Willows (*Salix alba vitellina*) are conspicuously yellow and orange. Many of the Poplar tribe have the upper parts of their trunk and branches quite smooth, gray, greenish or sometimes yellowish, in marked contrast to the bole, which is almost black, much fissured and rough. And so as one strolls about the Arboretum wherever one may look quiet beauty in variety may be seen.

The White Elm (*Ulmus americana*) is in full bloom and the crowns of many trees are ruddy brown. The flowers of the Silver Maple passed a month ago but those of the Red Maple are now in full beauty. The Poplars are in flower and a myriad catkins hang from the branches. Really it is astounding the wealth of bloom these trees put forth. The Hazel-nut tribe and some of the Alders are also in blossom. The Lilac buds are swelling rapidly and on more precocious shrubs like *Ribes cereum*, *R. orientale* and *Prunuspa sinensis* the young, green leaves are peering forth. On the Leatherwood (*Dirca palustris*) a few blossoms are beginning to show and so, too, are they on a number of bush Honeysuckles and in a few days a number of species will be in full bloom.

**First of the Honeysuckles** to blossom in the Arboretum is *Lonicera praeflorsens*, a native of Korea, which was introduced into cultivation by the Arboretum in 1917. This is a sturdy, twiggy bush growing from 5 to 6 feet tall with gray twigs clad with loose bark and small axillary flowers, the chief attraction of which is the relatively large, rose-pink anthers. Except that it is first to bloom, this species has little to recommend it. On the heels of this Korean Honeysuckle follows *L. Standishii*, a Chinese species with gaping, white flowers and yellowish anthers. Although native of the Yangstze Valley of central China, this plant is perfectly hardy in Massachusetts. Much more widely known and more ornamental is *L. fragrantissima*, a broad shrub with stout, rigid branches, growing from 6 to 10 feet tall and as much in diameter. This has oval to broadly ovate, leathery leaves, smooth and dark green above and glaucous on the underside, which remain on the plant far into the winter. In the old gardens of Virginia, Georgia, Tennessee and other southern states this Honeysuckle has for three-quarters of a century been a favorite shrub. It is in blossom about Christmas and continues until March. In the north we do not know the full beauty of this plant, so well and truly appreciated by southern gardeners. It is another gift of China, having been introduced into cultivation by that grand old plant collector, Robert Fortune, so long ago as 1845.

In the Shrub Garden the delightful little *Erica carnea* is now a mass of rose-pink. The hybrid, *E. darleyensis*, a cross between the above and *E. mediterranea*, which in some Massachusetts gardens is known as *E. mediterranea nana*, was in bloom at Christmastime; in
spite of the southern origin of one parent this hybrid appears to be perfectly hardy in the Arboretum. As groundcovers, and more especially as rockery plants, these two He. `hs are not yet so fully appreciated as their beauty merits.

On Bussey Hill beneath the old White pine trees, Rhododendron dauricum mucronulatum is beginning to push out its blossoms and by the time this Bulletin reaches its Bostoners will be in partial bloom, unless Jack Frost gives a rough deal. In the collection of Goldenbells, near the Lilacs, the Korean Forsythia ovata is in bloom. Since the introduction of this plant in 1917 there has not been experienced a winter sufficiently severe to test out its real bud-hardiness but from the region where it grows naturally there is every reason to believe that it will be capable of withstanding New England’s severest seasons. If this proves true, this species should be of immense value to the hybridist. Sturdy of habit and with relatively stiff branches and small flowers, it has not the grace and charm of other species but the supreme quality of bud-hardiness should give it unique value.

Before the introduction of the Forsythia in the early part of the nineteenth century the Cornelian Cherry (Cornus mas) was the popular yellow-flowered spring shrub. It has now been superseded by the larger blossomed Goldenbells, nevertheless, on account of its hardiness and earliness of blossom it ought not to be utterly neglected. At the moment of writing the rank and file of the Goldenbells are stark and bare, but the Cornelian Cherry is a cheerful mass of bright yellow. A native of southeastern Europe and western Asia, it has been cultivated since ancient times. A close relative is C. officinalis, native of Korea and eastern China. The flowers are very similar but those of the Oriental plant have longer foot-stalks and more prominent stamens. The bark, however, on the two plants is quite different, that of C. mas being almost black and only slightly scaling, whereas that of C. officinalis is gray and flakes off in sheets showing pale brown beneath. On the right hand side of Meadow Road near the Asiatic Cork trees plants of both species are in bloom and bark and floral characters may be compared.

The Arnold Arboretum is a department of Harvard University devoted to the acclimatization, cultivation and study of trees and shrubs, for which purpose it was expressly founded in 1872. It occupies about 260 acres of hill, valley and meadow some five miles south from the State House of Massachusetts and within the limits of the City of Boston. The natural features are varied but its proudest possession is a grove of virgin Hemlock growing on an outcrop of conglomerate rock. The Arboretum is open free to the public from sunrise to sunset every day in the year, and is easily reached by automobile along the main parkway and by the Elevated Railway alighting at Forest Hills Station. In the summer buses stop at the Forest Hills and Jamaica Plain entrances. The Administration Building, which contains a complete collection of American woods, a large herbarium of woody plants and a very extensive library, is just within the Jamaica Plain Gate.

E. H. W.
The cherry blossom season now opens in the Arboretum. Just within the Forest Hills Gate, on Bussey Hill, and on Peters Hill the single-flowered Asiatic Cherries are fast opening their pink passing to white flowers. The first to bloom is the Sargent Cherry (*Prunus serrulata sachalinensis*), a native of the forests of central and northern Japan where it is often a tree from 60 to 80 feet tall with a thick trunk and a magnificent crown. It has clustered pink or white blossoms, each from 1 to 1 1/2 inches in diameter, which open immediately before the bronze-tinted foliage unfolds. This Cherry is the hardiest of its tribe and since its introduction to the Arboretum in 1890 has never suffered winter injury nor have the flower-buds been killed. Fine as a specimen, it makes a splendid avenue tree and with a little attention when young maintains a shapely pyramidal crown. It is readily raised from seed, grows rapidly and is well suited for roadside planting in suburban areas. Apart from its beauty it is the best understock on which to work double-flowered Japanese Cherries of which it is one of the principal parents. Too much cannot be written in favor of this splendid tree.

The Tokyo or Yoshino Cherry (*P. yedoensis*) is the particular Cherry whose flowering at Tokyo is made the occasion of a national holiday. The planting round the Potomac basin at Washington, D. C., now familiar to millions of Americans, is of this species. Although abundantly planted in Toyko, Yokohama and Nagasaki, it is less so in other parts of Japan. Strange to say although a common tree in the districts mentioned it was not until quite recently recognized as a species and it has not yet been found in a wild state. The original trees on which the species is based may be seen in the old botanic garden in Tokyo. First introduced into the Arboretum in 1902 by seeds sent from Tokyo, this Cherry has proved less hardy than other Japanese species. As a matter of fact, Boston is a little too far north for its well-being and it is only occasionally that the flower-buds escape winter injury. From Cape Cod, where the genial influence of the gulf stream prevails, and south as far as Savannah, Georgia,
this tree is perfectly at home. Moreover, it does not resent city conditions and ought to be planted in tens of thousands in places like Central Park, New York City, and elsewhere. Where it grows freely it makes a stately tree 50 feet tall with a trunk from 8 to 10 feet in girth; the branches are thick, wide-spreading and form a broad, oval or flattened head some 50 to 60 feet through. It is, however, apparently short-lived but this should not be against its planting since it is easily raised from seeds and this is the way in which the tree should be propagated. In many respects it is intermediate in character between P. subhirtella ascendens and P. Lannesiana and possibly is a hybrid between the two, but against this must be stated the fact that it breeds true from seed. The original specimen at the Arboretum is just within Forest Hills Gate, where, however, its flower-buds usually suffer winter injury. On Bussey Hill and on Peters Hill are younger trees which as a rule come through the winter fairly well. However, it should be emphasized that this Cherry though perfect for New York City, for Washington, D. C., Augusta, Georgia, and elsewhere, is not properly adapted to the climate of Boston and northward.

The Spring Cherry of Japan, known as Higan-zakura and of which there are several varieties distinguished by a prefix to the general name, is descended from P. subhirtella ascendens, a Cherry found wild on the mountains of central and southern Japan, southern Korea, Formosa and central China. It is a tree from 60 to 75 feet tall with a short, massive trunk, often 12 feet in girth, and thick, wide-spreading branches. By the Japanese it has been long cultivated and in some of the temple grounds and parks, notably that of Ueno in Tokyo, there are magnificent specimens. The crown varies a good deal in shape but it is usually sparse and though the branchlets are thickly strung with blossoms it does not make the show some of the other species do, but it has given rise to several varieties which are very floriferous and useful. Most notable of these is that known as P. subhirtella, a low, broad-topped tree, of which the two oldest specimens in this country may be seen on the right just within Forest Hills Gate. This tree is grown on the west coast of Japan, a region remote from the ordinary routes of travel and from such centers of Japan culture as Tokyo and Kyoto. This probably explains why it was unknown to the Occident until almost the dawn of the present century. This Cherry, the true Higan-zakura, is a singularly lovely tree; as the buds swell the whole crown is rose-colored and as the flowers open the petals change from pink to nearly white, the whole tree being a billowy mass of bloom. Seen on a lawn and against a blue sky no picture is more beautiful. Unfortunately, being a garden form this Cherry does not breed true from seed, although a limited percentage reproduce the type. It may be budded and grafted on its own seedlings or propagated by cuttings but these should be grown along in pots since the plant does not bear root interference with impunity.

Of this group of Cherries best known is the Weeping Rosebud Cherry (P. subhirtella pendula) introduced into this country so long ago as 1861. Its cultivation has not been properly understood and this accounts for the fact that good specimens are very rare in this
The Tokyo or Yoshino Cherry (Prunus yedoensis)
country. The finest known to the Arboretum are those at “Reynoldia” just outside Winston-Salem, North Carolina. There is no need to attempt a description of this well-known Cherry but the fact that it should be grafted or budded on its own seedlings needs to be emphasized and emphasized repeatedly. A certain percentage will, it is true, come true from seed but its affinity is remote from the European Cherries and from its Japanese neighbors, none of which is suitable as an understock.

Another garden variety is *P. subhirtella autumnalis*, the so-called October-flowering Cherry, which as a matter of fact some seasons flowers in the autumn and at others in the spring. It has semi-double flowers and in habit of growth resembles *P. subhirtella*. This year the plant inside the Forest Hills Gate is now blooming freely.

*Prunus apetala* is the first of the Cherries to open its blossoms. The flowers, which are small, are borne singly or in fascicles of two or three; the calyx is long-tubed and after the petals have fallen with the stamens becomes intensely red. The petals are white, fading to reddish, rather fugitive which accounts for the specific name. This Cherry is a bush or small tree not uncommon on the mountain slopes about Nikko and elsewhere in Japan. The flowers are small and the plant really possesses little horticultural value, however, it merits attention as being the first of the tribe to open its blossoms.

Many species of Cherry have in recent years been reported from central and western China but few only are happy in the climate of Massachusetts. One of the best is *P. pilosiuscula*, a low, broad-topped tree with clustered, small, pinkish blossoms each with prominent yellow-anthered stems. The habit is excellent and in abundance of blossom is not surpassed by any species. Native of the mountains of central China, it was raised in the Arboretum from seeds collected in 1907 by E. H. Wilson. A fine specimen may be seen in the collection on Bussey Hill.

The cultivation of Oriental Cherries presents no difficulties, always supposing they be either on their own roots or worked on a proper understock. They demand a light, sandy loam where good drainage obtains, and a situation where they can enjoy full sun but sheltered from north winds. A warm bank is an ideal spot. What pruning is necessary should be done after they have flowered. Transplanting needs to be undertaken with care since when established they do not like root interference. Many of them are well suited to city conditions and they ought to be extensively used for this purpose. With the exception of *P. Lanmesiana* and *P. yedoensis* all the Japanese species introduced are perfectly happy in the Arboretum.

The Forsythia bank is now a glorious sight. Beneath the old White Pines on Bussey Hill *Rhododendron davuricum mucromulatum* is at the height of its beauty. A few of the early flowering Pears are in blossom and so, too, are a number of Almonds, Peaches and related plants. Magnolias are in full bloom in front of the Administration Building.

E. H. W.
The extremely cold weather of last week did considerable damage to the open blossoms; the Asiatic Magnolias in particular suffered severely and in many gardens the flowers were utterly ruined. It is unfortunate that these handsome plants put forth their blooms so early for rarely a year passes but what they are damaged in and around Boston. Last year and this those of the Star Magnolia, the White Yulan and Magnolia Soulangiana were utterly spoiled. To protect them from the late spring frosts the only hope is to plant them beneath the shade of trees or in some position where they are sheltered from the morning sun. The same remark applies to Rhododendron dauricum mucronulatum, which has likewise suffered greatly. In the spring we are so hungry for flowers that there is an irresistible temptation to grow plants which open their blossoms as early as possible. The result is that almost every year we are saddened by the effects of late frosts. Fortunately, the Cherry blossoms at Forest Hills Gate, which were not sufficiently advanced, came through unscathed and are now a delightful picture in pink and white. The floriferousness of these Cherries is, to say the least, remarkable; year after year they put forth a myriad of blooms. The cool spring and the consequent slow opening of blossoms has been favorable to the development of anthocyanin with the result that the flowers on some plants are more pink than is usual. The Sargent Cherry and some of the Asiatic Pears are noteworthy examples of this phenomenon. Some years the Sargent Cherry tree by the pond at the junction of Meadow and Forest Hills Roads has white flowers but this year they are a deep pink.

Prunus tomentosa, the Nanking Cherry, is an old and well-known favorite. Widespread in northeastern Asia, it is a plant of remarkable hardiness, doing well in some of the coldest parts of the United States. A broad, twiggy shrub with ascending branches it makes a rounded mass with the twigs throughout their whole length strung with white blossoms. The bark is dark and by contrast adds to the
beauty of the flowering bush; its fruits are bright red, of a subacid flavor, and quite palatable. Hybridists are at work with this plant and it may prove the forerunner of a new group of bush Cherries. In the experience of the Arboretum it is not a long-lived plant but being readily raised from seed or rooted from cuttings this should not militate against its planting.

The Forsythias withstood the cold blasts of last week in a remarkable fashion and remain a glorious mass of brilliant yellow. This is one of the bravest of all shrubs and few will deny that it is also one of the most joyous. Wherever it is seen in blossom it inspires cheerfulness and the manner in which it withstands all manner of abuse calls forth the greatest admiration. It is an excellent subject for cities, thriving equally well in the small town garden, park or square as it does in the pure air of the country. It is, indeed, an indispensable spring flowering shrub. In a state of nature the species grow in fully exposed rocky land and perhaps through aeons of time this has inured them to harsh treatment. Be this as it may, they will grow almost anywhere and in almost any kind of soil although they, no more than any shrub, do not object to rich food. Good drainage is the essential thing, therefore, a bank or slope makes an ideal situation. After they have flowered the bushes may be severely pruned, but alas! no shrub suffers so much from the mania for spring cleaning in the garden as do these good-natured plants. No matter where one goes one sees them badly mutilated either in the fall or early spring instead of waiting until the blossom season is over.

Forsythia suspensa was the first known, being introduced into Holland from Japan in 1833. It is, however, a Chinese plant probably taken to the “Land of The Rising Sun” by flower-loving Buddhist priests. The type is a rambling plant with long, whip-like branches which emit roots freely wherever they touch the ground. It is an excellent subject for draping a bank or making a screen over a wall and for such purposes should be more freely used than it is at present. Robert Fortune in 1861 introduced from near Peking, China, a bush form which bears his name and which soon became a popular plant. He also introduced from China in 1844 another species which was named F. viridissima, a relatively small shrub with erect branches and rich yellow hanging blossoms. Unfortunately, it is less hardy than F. suspensa and its varieties. About 1880 a hybrid between F. suspensa and F. viridissima was raised in Europe and named F. intermedia. This hybrid is more beautiful than either of its parents and, moreover, has given rise to a number of forms which take rank as the best of the tribe. The finest of all is the variety spectabilis, which has large, very deep yellow blossoms borne in the utmost profusion. The habit of the plant is fountain-like and those who want one Forsythia and the best need look no further than spectabilis. There is a pale yellow form named pallida, but this is scarcely so fine as the variety primulina, a chance sport which originated in the Arboretum some years ago. As its name suggests, this has primrose-yellow blossoms.
For many years the whole Forsythia family was considered to be purely Oriental but in 1897 a species was discovered in Albania and named *F. europaea*. Its interest is more botanical than horticultural, although it is by no means an ill-favored shrub. Of stuff, upright habit, it has pale grayish twigs and large, light yellow blossoms. It is, perhaps, the tallest of the Forsythias but with age becomes gaunt in habit. In recent years Korea has added to the list of Forsythia species and since the climate of that country is severe the plants native there have great value for New England. Frequent mention of *F. ovata* has been made in these Bulletins. This year the plants in the Arboretum have flowered very profusely and the fear that it was a shy bloomer has now been definitely laid to rest. The hybridists would be well advised to start using this most hardy of all the Forsythias.

This year *F. saxatilis*, another Korean species, has blossomed in the Arboretum for the first time. This has ascending branches, canary-yellow blossoms with widespread lobes more star-shaped than the usual Forsythia flower. It is too early to appraise the garden value of this newcomer but it appears promising. This species differs from the rank and file of Forsythias in having leaves slightly hairy on the under surface. Hairiness is a character which appears in many genera of the family *Oleaceae* to which the Forsythias, like the Lilacs, belong and would appear to be a family rather than a generic, much less specific, peculiarity.

*Acer saccharum*, the Sugar, Mountain, or Rock Maple, is now flaunting its tasselled primrose-yellow blossoms. On the first trees to blossom the flowers appear here and there but the plant never makes the brave show of blossoms that do certain of its relatives. It is, however, of all Maples, most dear to the people of New England and other parts of this country. As a source of Maple Sugar it needs no comment, for this toothsome subject is known and appreciated far and wide. The Indians were well acquainted with the sugar producing character of this tree and taught the French settlers how to convert the sap into sugar. It is one of the largest growing of its tribe, trees, 120 feet tall with massive, ascending branches being common. Its brilliant tinted foliage is one of the features of autumn landscape, the hues varying from shades of orange and scarlet to richest crimson. Indeed, no one tree contributes more to the autumn color of New England and lower Canada than does the Sugar Maple. Its economic value appealed to the early settlers and so, too, did its ornamental features. With the exception of the American Elm no tree was more commonly planted by them both in town squares and along roadsides. Today for country districts these two remain the best of native trees but in manufacturing towns they should not be planted for the gas and smoke laden atmosphere of such cities are poisonous to them. Widespread in this country and producing seedlings possibly more freely than any other species, strange to say, the Sugar Maple is almost impossible to cultivate in the British Isles, where only one or two indifferent specimens exist.

E. H. W.
Winter Effects. The vicinity of Boston has enjoyed a mild winter, being more fortunate in this respect than many districts in New England, not to mention more distant parts of the country. The frost at no time penetrated deeply into the ground which is fortunate since the snowfall on the whole was light. In general, the plants in the Arboretum suffered little winter injury, evergreens in particular coming through unscathed. Rhododendrons and other broad-leaved plants never looked better at this season than they do at the moment. In January and February some freak weather was experienced, the temperature rising to an abnormal height which was not without its ill effects. On January 8th the thermometer rose to 64°F. and from February the 20th to the 25th inclusive a daily average of 65°F. was maintained. This excited the flower buds on a number of plants, especially members of the Prunus tribe, and subsequent cold weather killed them. The flower buds on the trees of Prunus yedoensis near Forest Hills Gate and on P. mandshurica on the right hand side of Meadow Road were all blasted; so, too, were the majority on the Siberian Apricot (P. sibirica) and related species growing in the Shrub Garden. The Peach trees in many parts of Massachusetts have suffered badly; these early flowering northern trees are readily excited by warm weather in February and the result, as a rule, is disastrous. The advantage of planting them on high ground is well exemplified by trees of P. yedoensis on Bussey Hill and on Peters Hill, where the display of blossom was never finer, so the lesson is not to choose low land or supposedly warm corners in which to plant these northern spring-flowering trees.

April has been a cool, indeed a cold, month, affording a good planting season but at the moment rain is badly needed; however, the weather is seldom normal and it is remarkable how plants withstand its vagaries. The unprecedented drought of last summer at one time threatened disaster but the net result in the Arboretum is that trees and shrubs of all sorts were never laden with a greater crop of flower buds.
Spring is late this year but a goodly number of plants are beginning to put forth their blossoms. Alongside the driveways the Yellow-root (Zanthorrhiza australis) is a cloud of lurid purple and the low-growing, fragrant Sumach (Rhus canadensis) is laden with greenish yellow blossoms. These are two most useful plants for roadside and border planting, making excellent groundcovers and requiring very little attention. The single-flowered Japanese Cherries, the Chinese Almond, the Pears and the early Crabapples are making a show in different parts of the Arboretum and already the flower buds are visible on the Lilacs and many other plants.

Viburnum alnifolium, the Moosewood or Hobblebush, is a lovely native species. Unfortunately, it does not take readily to cultivation and it is doubtful if nursery grown plants can be obtained in the country. In flower, foliage and in fruit it is splendid and well-worth the extra patience required to get it established. Found naturally in cool, even wet, places in rich woods, it will when established do equally well on dry banks. It is the first of its tribe to blossom and one of the very best.

Prinsepia sinensis. This curious member of the Rose family is now in full blossom in the Shrub Garden. This plant is about 10 feet tall and 15 feet through; the arching spreading branches touch the ground and form a rounded, fountain-like mass. The leaves, narrow and suggestive of those of the Peach, partially hide the pale yellow blossoms, which are borne in fascicles in the leaf axils. The flowers have a pleasant odor reminiscent of Almonds and bees appear to find them extremely attractive. A native of Manchuria, it is an extremely hardy plant and it has never suffered winter injury in the Arboretum, though occasionally the young foliage gets nipped by spring frosts. Prinsepia bears a small plum-like fruit which contains a flattened pitted stone but, unfortunately, it fruits sparingly. No other means of propagation of the plant has been found so for a long time it must remain a scarce plant. Of less value as an ornamental is the white-lined P. uniflora native of northwestern China, which opens its blossoms after those of P. sinensis have fallen. Both plants grow naturally in gravelly soil and have long, whip-like roots and in consequence do not transplant readily.

The Asiatic Crabapples, both in the collection at the foot of Peters Hill and on the left side entering by Forest Hills Gate, promise to be unusually fine this year. The Manchurian Crabapple (Malus baccata mandshurica) is first to blossom, a large tree at the foot of the Crataegus collection on Peters Hill being now sheeted in white. The expanding buds of this Crabapple appear brownish when seen from the near distance but the flowers when open are the purest white; they are relatively large and delightfully fragrant. This native of Korea, Manchuria and other cold parts of northeastern Asia grows to a large size, approaching the dimensions of the common Apple. Its fruits are scarlet to crimson and a little larger than that of a garden pea. It is one of the most beautiful of the larger Crabapple trees and particularly worthy of growing on account of its early flowering qualities.
Fragrant blossomed *Malus baccata mandshurica*
**Malus micromalus** opens its blossoms rapidly on the heels of those of the Manchurian Crabapple. This is a tree growing 20 to 30 feet tall with a narrow, vase-shaped crown and a relatively slender trunk. The flowers are deep rose-pink in the bud and change to pink as they open. Known to the Japanese as the Kaido, it is cultivated sparingly here and there in that land but has not been found in a wild state. Its blossoms are richly colored and are borne with the profusion for which Crabapples are remarkable. Its fruits, however, are dull, brownish green and of little ornamental value.

**Pyrus serotina.** Apart from being the principal parent of the Chinese Sand Pears, this tree is well worth growing for its ornamental qualities. It has larger flowers of a purer white than any other species of Pear. Native of the woodlands of Central China, it is a rapid growing tree, often 60 feet tall, with a pyramidal crown and a trunk 6 to 8 feet in girth. The best tree in the Arboretum was raised from seeds collected by E. H. Wilson in the autumn of 1907 and is now full 35 feet tall. The young foliage is bronze-green and appears after the petals have fallen. The fruit, flattened-round and russet, varies from \( \frac{1}{2} \) to 1 inch in diameter and is hard and gritty but full of sugary juice. For how long this type of Pear has been grown in the Orient we know not but the wild prototype was only discovered in 1900. Of all the species of Pyrus proper this is the most ornamental.

Why are the Shadblows or Juneberries so rarely planted and so hard to come by in this country? Is it because they are native and suffered from the contempt born of familiarity? But whatever the reason it is a gross injustice and gardens are denied the beauty of some lovely spring-flowering bushes and trees. There are a goodly number of species, varying from bushes 2 to 3 feet in height to trees 40 feet tall. In the Arboretum these plants have been freely planted alongside the driveways and margins of woodlands. Two species (*Amelanchier oblongifolia* and *A. laevis*) are native. Just now these and other species are laden with their white, star-like blooms. The branches are slender and graceful and the plants from a distance look like clouds of mist. The earliest to blossom is *A. canadensis*, which is a tree sometimes 30 feet tall with a trunk 5 feet in girth and pure white blossoms borne in advance of the leaves. For many years this plant was confused with other species and more particularly with *A. laevis*, which is distinguished by its ruddy unfolding foliage. *A. oblongifolia*, which is the more common of the two species indigenous in the Arboretum, is a large bush sending up from the base a great number of stout, erect stems which branch and form a broad, oval mass. As this Bulletin reaches its Boston readers these Shadblows will be at their best.

E. H. W.

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Spring is always an explosive season but rarely has its progress been so rapid as this year. Ten days ago the growth of vegetation was tardy; now it is far ahead of normal seasons. The advance has been altogether too rapid for the full and proper appreciation of spring blossoms. Owing to the excessive heat many lasted but a day and on some plants, Malus spectabilis for example, the flowers were actually scorched on the branches. The results at the moment are anomalous. Lilacs, Crabapples, Honeysuckles, Dogwoods, Hawthorns, Viburnums, Japanese Quinces, American Magnolias, Azaleas and certain broad-leaved Rhododendrons are all in blossom as this Bulletin goes to the press. The Horsechestnut with its upstanding candelabra of white blossoms is now at the height of its glory and yellow and pink blossomed Buckeyes are in full bloom in the collection on the right of Meadow Road. On May 1 vegetation was two weeks behind normal; on May 15 it was fully two weeks in advance. Such are the vagaries of New England’s climate.

Blossoms are everywhere abundant in the Arboretum and the unfolding leaves in their different green, gray and ruddy tints are exquisitely beautiful. There is no better time for a visit than now. Without venturing from the roadsides a rich variety of blossoms may be seen. The Dogwood is flowering well and having been freely planted in the Arboretum is very conspicuous. The Shadbushes past rapidly but the Silverbell (Halesia carolina) is now laden with flowers. Viburnums in variety are opening their blossoms, particularly noticeable being the American V. prunifolium. The groups of Rhododendron Vaseyi along side Meadow Road are masses of the purest pink. At the foot of the Hemlock Grove R. carolinianum is in full bloom and so, too, is the hybrid Mont Blanc and an unnamed cross of R. Smirnowii. On Peters Hill scores of species of Hawthorn are in blossom. The season is not favorable to the flowers on these somewhat evanescent petalled subjects, however, while they last they are a lovely picture in white. The Conifers and Yews are commencing to make their new growth and the
contrast between the pale green of the young foliage and the black green of the old is vivid.

The Lilacs are blossoming well this season and are now at the height of their beauty. The rejuvenation induced by severe pruning three years ago is now complete and the bushes are shapely in habit and even in size. The flower trusses are much larger than before the pruning but the individual flowers show no increase in size. To those who have Lilacs more or less decrepit with age the Arboretum's experiment is of importance. It is astounding how well such Lilacs respond to drastic pruning, however, to those contemplating such work it cannot be too strongly emphasized that the pruning be done as early as possible in the spring, the ground about the roots broken up and the plants well fed. Also it is well to avoid half measures since Lilacs push forth young growth immediately below the cut and unless they are pruned low the after effects of strong winds is disastrous. The popularity of the Lilac is steadily on the increase, and rightly so, for where winters are cold and summers hot no shrub gives greater returns. For a greater length of time than any other exotic shrub it has been associated with the American home and of all hardy flowering shrubs it is the one which people irresistibly bury their noses among the flowers to inhale the fragrance. Of the 290 varieties of the Common Lilac growing in the Arboretum nearly all are now in full blossom and those interested would do well to visit the collection and appraise them at their own worth. The Persian Lilac (*Syringa persica*) and the hybrid between this and the Common Lilac (*S. chinensis*) are also in flower and so, too, is *S. pubescens*, the most fragrant of all Lilacs.

The Asiatic Crabapples almost invariably give a good three week's succession of blossom but this year they were over within ten days. The American species and forms are now beautiful both in the collection at the foot of Peters Hill and on the left of Forest Hills Road near its junction with Meadow Road. The favorite Bechtel Crabapple (*Malus ioensis plena*) is garlanded with rose-like, fragrant blossoms. This is essentially a tree for the lawn or for proximity to the house, but its wild parent, *M. ioensis*, and other American species are well adapted for planting in the wild garden and on the margin of woods; their fragrance is suggestive of that of Violets and their floriferousness is scarcely inferior to that of their Asiatic relatives.

In the Shrub Garden a general miscellany of bushes are in bloom and for the next six weeks this part of the Arboretum will well repay a visit. It may be taken for granted that all the plants flourishing in this garden will thrive in almost any part of New England. The Japanese Quinces in variety are laden with their brightly colored blossoms, varying through different shades of red to pink; in some cases the flowers are white. The low growing tufted *Iberis sempervirens* suggests a sheet of snow and nearby the yellow blossomed *Cytisus* and *Genistas* afford striking contrast.

Bussey Hill is the heart of the Arboretum and the mecca of those interested in Azaleas and newer Asiatic plants. Of Azaleas the flaming
Rhododendron Kaempferi, the American *R. roseum* and *R. nudiflorum* are a wealth of bloom and viewed from a vantage point on the right of Bussey Hill Road present a charming picture beneath the unfolding foliage of Oak trees. The double-flowered Japanese Cherries due to the warm weather in February are not flowering so freely as usual, although certain trees of Alba-rosea and Sekiyama, better known as Kanzan, are as abundantly strung with white and pink blossoms as ever before. In the case of the rank and file, however, many blossoms were blasted. Some of the early flowering Brooms are in full bloom and so, too, are many Barberries, Cotoneasters, and Honeysuckles. The Enkianthus also are fast opening their blossoms.

Daphne cneorum, the Garland Flower, is a general favorite but it is one of those plants that has strong likes and dislikes, thriving marvelously in some gardens and in others an abject failure and in both cases no reasons are apparent. For many years the Arboretum has had difficulty with this plant but at the moment it seems to have made itself at home in a planting at the foot of an outcropping of rock on the right of Valley Road, entering from Centre Street Gate. The situation is well-drained and to the natural soil a liberal admixture of crushed stone has been added. The latter has also been used as a winter mulch to the great enjoyment of the plants. This low-growing Daphne with its terminal, hemispherical heads of deep pink, fragrant blossoms is excellent for rockeries and also where it is happy as a groundcover. From the experience of the Arboretum it is essentially a sun loving subject. Besides the type there is a variety (*major*) with large, deeper pink blossoms, and another (*Verlotii*) which has narrower leaves.

Rhododendron reticulatum, better known as *R. rhombicum*, is now in flower on the southern slope of Bussey Hill. This is a Japanese species common throughout the greater part of Japan, although it is rare in Hokkaido, the northern island. In the Nikko region and on the lower slopes of sacred Mt. Fuji and surrounding mountains it is extraordinarily abundant both in the open, in thickets, on the margin of woods and an undergrowth in thin forests. It varies in height from a low, broad bush 3 to 4 feet tall to a bushy tree fully 25 feet high and has erect and spreading rigid branches, more or less rhombic leaves, membranous but firm, prominently reticulate and each from about 1 to 2½ inches in length and from 1 to 2 inches broad. The flowers are borne in pairs or in clusters of three or four at the end of the naked shoots. The corolla is rosy purple, varying from lighter to darker shades, about 1½ to 2 inches across, usually unspotted with a short tube and spreading lobes which are often divergent giving the corolla a lipped appearance. In the autumn the leaves change to vinous or blackish purple or occasionally to yellow with splashes of red purple and are strikingly handsome. This Azalea is somewhat difficult when young but with age it is perfectly amenable and like all Azaleas does best when massed. The oldest plant in the Arboretum was raised from seed collected in Japan by the late Professor Sargent in 1892.

E. H. W.
Barberries, of which the Arboretum possesses a very complete collection of species, hybrids and varieties, are now in full blossom and will repay the study of those interested in this useful group of plants. They are to be found in the Shrub Garden, on the right of Bussey Hill Road, and on Bussey Hill, where the newer Chinese sorts may be seen. Varying in height from low shrubs 2 feet high to bushes 12 and more feet tall, they afford most useful material for ornamental plantings. Many of the species might well be used as flowering shrubs but nearly all of them are valued for their brightly colored fruits and brilliantly tinted autumn foliage. Several species are invaluable for hedge making; indeed, for this purpose no plant is better suited than the well known *Berberis Thunbergii*, one of the most widely planted shrubs. Few people are aware of the fact that it first saw light of day in this country in the Arboretum, having been raised from seed sent from the Botanic Garden, St. Petersburg, in 1875. From the Arboretum it passed into nurserymen’s hands and has been sold and planted by the tens of millions. For the northern parts of this country it is certainly one of the most useful of exotic shrubs, carrying its scarlet berries through the winter and well into the spring.

*Berberis Vernae* is one of the most outstanding of Chinese Barberries. The habit is fountain-like for the branches are slender, very dense and arch over and sweep the ground. The leaves are narrow, more or less oblong-lance-shaped and dark green. The flowers are a clear deep yellow, densely crowded on pendent, short-stalked, grape-like racemes, each about 2 inches long. They are borne in the utmost profusion, terminating short branches throughout the entire length of the shoot. In the autumn the branches are ropes of small, round, salmon-red fruits as beautiful as those of any shrub. The species is native of extreme northwest China, where it was discovered in the autumn of 1903 by E. H. Wilson, and the plant on Bussey Hill, now 10 feet tall and 18 feet in diameter, was raised from seed collected then.
Berberis circumserrata is a newcomer from China, where it was discovered and introduced by William Purdom in 1910 when collecting for the Arboretum. This is a bush from 5 to 8 feet tall and more in diameter, compact and rounded in habit with arching branches. The leaves are lustrous green, obovate, from 1 to 2 inches long, ¾ to 1 inch broad, and serrate along the margins. The flowers are relatively large, light yellow and borne several together in stalked fascicles terminating the short shoots. In the autumn its foliage changes to intense shades of scarlet and crimson, indeed, its autumn tints equal those of the lovely B. diaphana, to which it is closely related.

Syringa Potaninii is flowering freely for the first time in the Arboretum, where it was raised from seed received from the Botanic Garden, Edinburgh, in 1924. A bush 5 to 8 feet tall, it is of upright habit, sparsely branched, twiggy and graceful; the leaves are ovate, each from 1 ½ to 2 inches long and about 1 inch broad, pointed and covered with a soft, pale gray pubescence. The flowers are almost pure pink, the eye being rose colored; they are borne many together in narrow, terminal panicles, each from 5 to 8 inches long. While the odor is not particularly pleasant, the appearance of the plant is decidedly pleasing. Native of extreme western China, it was discovered by the Russian traveler, G. N. Potanin in 1893. Other species of Lilac now beautifully in bloom are Syringa Meyeri, S. microphylla, S. velutina, S. pubescens and S. persica.

Syringa persica, the so-called Persian Lilac, is one of the oldest and one of the most beautiful of the whole Lilac tribe. Introduced into European gardens from Persia long, long ago it was formerly much more widely grown than at the present time, the popularity of the multitudinous forms of the Common Lilac having ousted it somewhat from public esteem. Connoisseurs, however, still consider it one of the loveliest of all Lilacs. Its history is a romantic one. For centuries it was considered native of Persia although it has never been collected wild in that country, yet as an escape from gardens it is common on the scrub-clad mountain slopes. According to the latest information, its real home is the province of Kansu in extreme northwest China from whence it was introduced into cultivation by F. N. Meyer in 1915 when collecting for the United States Department of Agriculture. In 1917 the Arboretum received a plant from the Bureau of Plant Industry, Washington, D. C., which may now be seen in full bloom on the Lilac bank. This wilding has both simple and laciniate leaves on the same branch; the flowers are relatively large, deep lilac-purple and borne in great profusion along the branches, in fact transforming them into narrow plumes 1 to 2 feet long. Dr. Karl Sax of the Arboretum Laboratory, investigating the chromosomes of the Persian Lilac, is of the opinion that this wilding is the only true species and that the old-fashioned type appears to be of hybrid origin. In appearance the two forms are widely distinct.

The old garden Persian Lilac together with the Common Lilac (Syringa vulgaris) are the parents of the hybrid S. chinensis, some-
times known as *S. rothomagensis*, the Rouen Lilac. This is a long-lived plant, forming bushes 10 to 15 feet tall and more in diameter, every branch of which terminates in a long, dense cluster of blossoms. There are several color forms, all of them well worth growing. Some authorities are of the opinion that if they could only have one Lilac it would be the Rouen Lilac. It originated as a chance hybrid in the Botanic Garden at Rouen so long ago as 1777.

*Malus glaucescens*, now in bloom in the Crabapple Collection at the foot of Peters Hill, is one of the most recently recognized American species. A low, much branched tree with spiny branchlets, it will grow 15 to 20 feet tall with a crown fully 25 feet tall; the leaves are ovate, each from 2 to 2 1/2 inches long and 1 to 2 inches broad, lobed and deeply toothed, shining green on the upper and gray-green and almost smooth on the under surface. The flowers are rose-pink in the bud, pink when fully expanded, and are borne several together in terminal clusters each on slender, rosy pink stalks; the stamens are salmon colored and add not a little to the beauty of the flower. It is found wild from North Carolina to Alabama and was brought into cultivation by the Arboretum in 1902.

*Cotoneaster multiflora*, sometimes known as *C. reflexa*, is now in full flower on Bussey Hill. A widespreading shrub with arching spreading branches, it grows from 6 to 10 feet tall and half as much in diameter. The flowers are white, conspicuous, and are borne in small clusters at the ends of short lateral shoots, transforming the whole branch into a spray of blossom. The fruit is crimson and relatively large. This Cotoneaster is native of northern and western China, extending west into Turkestan and has been in cultivation since 1837. It is perfectly hardy and is beautiful when in flower and in fruit. Other important members of the particular group to which this species belongs are *C. hupehensis* with very large, globose, crimson fruits and *C. racemiflora soongorica* with grayish foliage and coral-pink fruit.

Azaleas are, indeed, joyous shrubs and it may be said of them that one and all are worthy of the widest cultivation where acid soils prevail. On Bussey Hill there is a brilliant display of thousands of bushes. Very attractive at the moment is the native *Rhododendron nudiflorum*, the Pinxter-bloom, widespread in eastern North America from Massachusetts to North Carolina west to Ohio. A twiggy plant of compact habit, it is sometimes 10 feet tall and flowers when it is quite small. The delightfuly fragrant blossoms borne in rounded clusters at the end of every shoot vary in color from the palest pink, almost white, to rose-pink; the out-thrust stamens are light crimson. A close relative is *R. roseum*, distinguished by its more hairy leaves and larger, deep rose-pink flowers.

E. H. W.

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Back numbers available.
Welcome rains have fallen since the last Bulletin appeared and the Arboretum has benefited greatly. At the moment the foliage, half to three parts grown on most of the trees and bushes, is looking its best and blossoms are abundant. The Dogwoods here and there are still in good condition and so, too, are the Hawthorns and Buckeyes. Many species of Viburnum are rapidly opening their blossoms; Azaleas continue to make a brilliant display and one of the most charming pictures in the Arboretum is the bed of *Rhododendron canescens* on the right of Meadow Road. This native species for beauty of blossom and fragrance is, indeed, one of the best of its tribe. In the Shrub Garden many different species of shrubs are in full bloom and Bussey Hill as usual is rich in color. *Enkianthus campanulatus* and its relatives are blossoming as freely as ever. Frequent mention of this group of shrubs has been made in these Bulletins during the past years but where acid soil prevails their value as ornamentals cannot be overrated. Among the Erica family, for sheer beauty, these Enkianthus are among Japan’s greatest gifts to the gardens of eastern North America. Planted where they can enjoy good air and root drainage, they are immune to the terrors of winter, moreover, they transplant readily even when of large size, always supposing the work be carefully done and the plants not allowed to suffer lack of water. In the experience of the Arboretum the early part of October is the best season for transplanting these splendid shrubs.

*Rhododendron carolinianum* is now in full bloom on the left just within South Street Gate and also in the Rhododendron group. This native of the mountains of North Carolina is one of the hardiest of all Rhododendrons and one that ought to be widely cultivated. It is a twiggy shrub growing from 5 to 8 feet tall and making a broad, rather loose bush. The flowers, clustered at the ends of the shoots and borne well above the leaves, are of varying shades of rose-purple to almost pink and are exceedingly attractive. There is also a white form (*album*), but this is less valuable as an ornamental plant. The Rhodo-
dendrons in general are this year well budded and promise to be unusually fine. Some of the earlier hybrids, such as Mont Blanc, Boule de Neige, Viola and Glenryanum, are passing out of blossom, while Old Port, Daisy and Charles Dickens are rapidly opening their more or less red blossoms. So, too, is the Caucasian species (R. Smirnowii) with large trusses of handsome pink flowers and leaves felted gray on the under side.

The Rose Acacias in the group on the right of Meadow Road below the steps leading to the Lilac border are now beautifully in blossom. This purely North American genus is represented by about 25 species and hybrids, several of which are critical and not easy to distinguish. Some 18 of these are in cultivation in the Arboretum. One and all flower freely but, unfortunately, they have brittle stems which are easily broken by winds, and in the case of the best known member of the family, the Black Locust (Robinia pseudoacacia) suffer badly from attacks of boring insects. Indeed, it is virtually impossible for this tree to attain anything approaching its maximum size or maturity in New England. Of the bush sorts the oldest known is R. hispida, a low growing plant well suited for clothing dry banks. It is later to blossom than some of its relatives. One of the very best is R. Kelseyi, a spreading bush or small tree sometimes 12 feet tall. This has narrow-oblong leaflets, ruddy tinted as they unfold. The flowers, which open in advance or at the same time as the leaves, are deep pink and strung in pendent racemes on the current season's shoots. A well grown plant of this Acacia is a striking ornament in any garden. A chance hybrid between the above and R. pseudoacacia is R. Slavinii, which originated in the Durand-Eastman Park, Rochester, N. Y., being raised from seed of R. Kelseyi collected in 1914. This partakes of the bushy habit of R. Kelseyi but has slightly larger flowers, paler pink with the wings suffused with white and a yellow mark in the center of the standard. It is as free flowering as either of its parents and from its behavior in the Arboretum gives promise of being a highly desirable plant. R. viscosa, one of the most familiar members of the group, has pale pink blossoms; the young shoots, the peduncle, pedicels and calyx are covered with reddish, glandular-viscid hairs.

Bush Honeysuckles. Many species and hybrids are now in full blossom and the collections bordering Meadow Road and in the Shrub Garden will well repay the inspection of those interested. The group is a very large one and furnishes not only plenteous blossom but an abundance of fruits, which ripening in mid-June on some species provide a succession until November when the last of the tribe (Lonicera Maackii podocarpa) is at its best. Particularly attractive is the gray leaved Persian Honeysuckle (L. Korolkowii) and its variety (floribunda). Lovely also is L. amoena, a hybrid between L. Korolkowii and L. tatarica, of which a fine plant of the best form, known as arnoldiana, may be seen in the collection at the right of Meadow Road. In this shrub the main branches are stout and ascending-spreadling; the branchlets are slender, whip-like and form a round-topped, pendulous mass clothed with bluish green, narrow-oblong, pointed leaves. The
Rhododendron carolinianum
flowers are pale pink, gaping, with very large and prominent yellow anthers which add much to the beauty of the blossoms. Like all the tribe it is free flowering and deserves to be better known.

Lonicera spinosa Alberti, a native of Turkestan, is now in bloom in the Shrub Garden. This is a low growing bush with slender, arching branches, blue-green, narrow-oblong leaves and axillary, pink flowers, usually in pairs, star-shaped with straight stamens tipped by straw-colored anthers. While this plant is perfectly hardy, it, like many other natives of central Asia, does not grow well in the Arboretum. It is happiest where the climate is less changeable and where spring frosts are not known. Somewhat similar in general appearance, but more vigorous of habit, is L. syringantha and its variety Wolfii, both with heliotrope-scented blossoms. This species is native of extreme north-western China, where it is common in sub-alpine regions, forming a tangled mass, either prostrate or up to 5 or 6 feet tall. A related species, distinguished by having the under side of the leaves covered with a felt of pale gray hairs, is L. thibetica, a native of the upland thickets of the Chino-Thibetan borderland. This is a hardy shrub of compact habit with arching branches, forming a dense rounded mass seldom more than 5 feet tall and producing in abundance axillary fascicles of pink blossoms.

Lonicera Maximowiczii sachalinensis is a newcomer from north-eastern Asia, having been raised in the Arboretum from seeds sent in 1917 by E. H. Wilson from Korea. A rounded bush 5 to 8 feet tall and more in diameter, this species has perfectly smooth, oblong-ovate leaves, each about 1½ inches long and ½ to ¾ of an inch broad, dark green on the upper and gray-green on the lower surface. The flowers are carmine, produced in pairs at the end of a long, slender peduncle. The corolla is gaping, with prominent white filaments and straw-colored anthers. In the great family of Bush Honeysuckles the color is almost unique and no species flowers more freely. The fruits are scarlet and ripen in July. Shapely of habit and free growing, this new species promises to be of much value in ornamental planting.

Syringa Julianae, a mid-season flowering species of Lilac, may now be seen in full blossom at the top of the Lilac bank. This is a native of central China, where it grows in rocky places between elevations of from 6000 to 9000 feet above sea level. It has ovate, pointed leaves, each 1½ to 2½ inches long and 1 inch and 1¼ inches broad, more or less covered with soft hairs. The flowers, borne in terminal panicles, are deep lilac-purple in the bud becoming paler as they open. It has relatively slender, ascending-spreading shoots and forms a broad, rounded mass. Like other Lilac species it is perfectly hardy in the Arboretum and each and every year puts forth a wealth of blossom. S. Wolfii, a native of Korea and adjacent regions of Manchuria, where it grows in forest glades, on the margins of woodlands and in thickets, is also in bloom. Related to the well known S. villosa, this has spreading, often nodding panicles of dark lilac-purple blossoms. The corolla tube gradually increases in width from the base upwards and terminates in four hooked lobes.

E. H. W.
Hybrid Rhododendrons at the foot of Hemlock Hill are now rapidly opening their blossoms. A few sorts are past, some are in full bloom, but the majority are just beginning to expand their flower trusses. Given decent weather during the next two weeks this collection will be a feature in the Arboretum. None will deny that where an acid soil prevails these Rhododendrons are the handsomest of broad-leaved evergreens. They have in abundance dark green, more or less oblong leaves larger than those of any other tree or shrub with persistent foliage that can be grown out-of-doors in the climate of Massachusetts. Moreover, they are remarkably free-flowering, every shoot terminating in a large, globose cluster of flowers, white or in varying shades of pink and red to deep purple. No wonder that it is the ambition of most people with gardens to grow these plants and where they are happy their cultivation is relatively simple. To the natural soil of New England additional Oak leafmold is about all that is necessary except a cool position sheltered from the winds and from the east and southeast on account of the hot sun in February and March; indeed, they are best planted under partial shade, that of the White Oak being exceptionally favorable. Where the climate is favorable these simple conditions are all that Rhododendrons really need. Alas! the great drawback in Massachusetts is climate; in a latitude virtually that of Rome and the sun heat of that city from March to September we have the winters almost of Labrador, conditions which few broad-leaved evergreens much less Rhododendrons can tolerate.

The Arboretum collection represents fairly completely the survival of the fittest. Many scores of varieties have been tested and found wanting but a small percentage have come through in a manner more or less satisfactory. In the eighties of last century the late Anthony Waterer, the Father of Hybrid Rhododendrons, used to send what he thought to be his hardest varieties to the Arboretum for testing and this is how it came into possession of the collection it possesses.
American nurserymen have scarcely attempted the breeding of hybrid Rhododendrons, being content to import plants direct from Europe. The advent of Quarantine No. 37 made such importation virtually impossible and the result is a great scarcity and very high prices for such Rhododendrons as are available.

These Bulletins have continuously urged upon American nurserymen the necessity of breeding a race of Rhododendrons suitable to the climate and will continue to do so until the happy event is consummated. The hybrid Rhododendron of today is very largely an English product, having been raised especially for the moist, cloudy climate of the British Isles. For that land the race or races are eminently suitable but New England is climatically not merely another country but almost another world. It calls for plants capable of withstanding extreme heat in summer, great cold in winter, combined with a comparatively low rainfall, conditions inimical to broad-leaved evergreens in general and Rhododendrons in particular. The almost complete absence of this class of vegetation from the native flora clearly indicates that the climate is unsuited to their growth. In the British Isles the hybrid Rhododendrons of today are of exceedingly mixed parentage, many species being employed especially those of the Himalayas and central and western China, the latter unknown to gardens until the dawn of this century. In the Arboretum hybrid Rhododendrons belong to two groups only.

Catawbiense Hybrids, so-called, represent overwhelmingly the largest and best known group. These are the product of intercrossing two American species (Rhododendron catawbiense and R. maximum) with the Eurasian R. ponticum and the red flowered Himalayan R. arboreum and reacrossing and selecting from the hybrid progeny. The flowers of the American and the Eurasian species lack color and so the value of the rich red flowered Himalayan species is obvious. Unfortunately, so far as New England is concerned R. ponticum and still more so R. arboreum are tender in this climate and it is only where the blood of the two American species prevails that the types are hardy.

In the Arboretum collection some seventy named varieties of Catawbiense Hybrids are grown and with the exception of a small group of German origin, which came in 1908, nearly all were raised before 1885. In spite of the fact that in recent years European hybridists have turned their attention to intercrossing less hardy but more beautifully colored Chinese species, Catawbiense Hybrids have not been altogether forgotten. This being the case it is reasonable to suppose that at least a few sorts as hardy as some of the earlier varieties have been evolved. The recently formed Rhododendron Association with headquarters in London published in 1930 a “Year Book” in which is given a fairly complete list of the hybrid Rhododendrons in gardens. The hybrids are marked with different letters indicating their comparative hardiness and garden merits. A careful scrutiny of this list shows that nearly all the varieties in the Arboretum col-
lection are recorded but one only is indicated as being worth growing! The one so honored is Album elegans. This is, of course, a British viewpoint but absolutely unbiased and indicates clearly how much below their standard are the hybrid Rhododendrons cultivated here. It is probable that a few of the toughest sorts give better returns here than in the British Isles but when every allowance possible is made the result is disappointing. To argue that no varieties suitable for this climate have been produced since 1885 is foolish; there may not have been many but some there must be and it is greatly to be regretted that they are not represented in gardens here. In Album elegans with pale mauve fading to white blossoms, the very similar Album grandiflorum and the white flowered Catawbiense album we have three excellent varieties of their class. Of the reds passing to crimson Charles Dickens, James Macintosh, Kettledrum, S. B. Parsons, Atrosanguineum and H. W. Sargent are good but it must be confessed that the rest have dull, unattractive colored blossoms. We have really no good pinks among these hybrids and the purples are one and all muddy. Lady Armstrong, Ignatius Sargent, F. L. Ames and Daisy are passing fair but what is needed are varieties with purer and better colors and especially more fiery scarlets of the type of Prometheus, alas! scarcely hardy in the Arboretum.

Caucasicum Hybrids. The product of intercrossing R. caucasicum with certain Catawbiense Hybrids and other species form a small but extremely useful group. They possess no wide range of color, all having blossoms white or nearly so, but they are very hardy and free flowering. They are said to root from cuttings and, moreover, to be slightly tolerant of limestone. The typical species, whose flowers appear to vary in color from white through pale straw-yellow to pink, is probably not in cultivation in this country. Perhaps the nearest approach to it is Coriaceum, which has flowers pale pink in the opening bud and milky white when fully open. Two of the best of this group are Mont Blanc and Glennyanum, both pinkish in the bud and pure white when the blossoms are fully opened. Another excellent sort is Boule de Neige which has pure white blossoms.

Fortunei Hybrids. In recent years a great many varieties of this origin have been originated in the British Isles, where, indeed, they have out-classed in beauty of blossom and popularity the older Catawbiense Hybrids. Of this group only one has so far proved perfectly at home in the Arboretum; this is Duke of York which was received from Mr. G. Paul of Cheshunt, England, in 1915. This has soft pink, 5- to 7-lobed blossoms, each about 3 inches broad, borne ten or twelve together in a loose cluster. It is growing in a well protected spot and so far has not suffered unduly from winter cold. At Sandwich, Massachusetts, Mr. Charles O. Dexter, experimenting with this group and R. decorum, another Chinese species, has succeeded in growing and blossoming a number of very lovely forms. Given adequate protection it seems probable that many of these hybrids would prove as amenable as the Catawbiense Hybrids.

E. H. W.
The Arboretum is still gay with blossom. The hybrid Rhododendrons at the foot of Hemlock Hill are in their prime; Azaleas of several sorts make fine splashes of color here and there, especially through the Oak collection where *Rhododendron calendulaceum*, the Flame Azalea, in yellow, orange and scarlet, is particularly arresting. Viburnums are in full bloom and so, too, are many other shrubs. In the Pinetum the bright greens of the young growth on Hemlock, Spruce and Fir are in marked contrast with the dark black-green foliage of last season, and the Yews with their brownish green young foliage are particularly lovely; it is trite to say that narrow-leaved evergreens are lovely at all seasons but it is now in their young growth that they display their maximum beauty.

**Cornus controversa.** This Cornel is one of the loveliest of all flowering trees that can be grown in the climate of New England. On Peters Hill there are two or three fine specimens now in full bloom. The largest of these was raised from seeds collected in central China by E. H. Wilson in 1907 and is 20 feet tall with a trunk about 1 foot in diameter, the branches spreading fully 50 feet. The branches are whorled but in this particular tree they are more crowded than is usual, the normal habit of branching being tier above tier. The leaves are slender petioled, prominently veined, lustrous green on the upper and glaucous on the lower surface. The flowers, small, white with prominent erect, pale yellow-anthered stamens, are borne in erect, flattened-round coryumbs, each from 3 to 5 inches in diameter. The inflorescences terminate every shoot and the whole tree is a mass of white, tier above tier and conspicuous from afar. The fruit, globose, the size of a garden pea, is blue-black. To get the full effect of beauty of this tree it should be planted where it can be looked upon from above when its full wealth of blossom is apparent. This Cornel is widespread in northeastern Asia, extending from the Chino-Thibetan borderland eastward on the mountains of China and southern Korea.
to those of Japan. In a wild state it is frequently a tree from 60 to 75 feet tall with a smooth trunk as much as 3 feet in diameter. It grows in moist woods and especially among humus-clad rocks in ravines.

The Cornel family is an extremely large one, yet *Cornus controversa* and the native *C. alternifolia* are the only ones which have alternate leaves. The native species is an ornamental bush or small tree and is more remarkable for its purple-stained autumn foliage than for its blossoms. Its Asiatic relative is far superior and, moreover, grows to a much larger size. Neither of the species transplant easily nor do other related species, such as *C. macrophylla* with opposite leaves. To give of its best *C. controversa* requires a cool woodland soil and when properly placed is an ornament of which any garden may be proud.

*Malus florentina* or *M. crataegifolia* as it is often called, is a delightful species of Crabapple which blossoms later than other species. It is a bush or small tree with thin, flaking bark and slender ascending branches. The leaves, more or less ovate, are cordate at the base, lobed and incised, each about 2 to 2 1/2 inches long and 1 1/2 to 2 inches broad, prominently veined and covered with gray, silky hairs on the under surface. The flowers, borne several together in loose, terminal corymbs after the leaves are fully grown, are pure white, each about 3/4 of an inch across with prominent yellow-anthered stamens. The fruit is roundish, oval, about 1/2 an inch long, yellowish changing to red. This species is native of northern Italy and is rare both in a wild state and in cultivation. A nice specimen received from the Royal Botanic Gardens, Kew, England, in 1906 is now in flower in the mixed plantation on top of Peters Hill.

*Laburnum Watereri* is in full blossom on Center Street path. This is a hybrid between *L. alpinum* and *L. anagyroides*, better known as *L. vulgare*. The hybrid is fairly intermediate in character, having leaves more or less clothed with hairs and pendent racemes of clear yellow blossoms, each 8 to 10 inches long. *L. alpinum*, the so-called Scotch Laburnum, a native of central and southern Europe, of which there is a fine specimen on the right just within Forest Hills Gate, has lustrous green foliage and racemes even longer than those of the hybrid. Both are perfectly hardy in Massachusetts but having very thin bark are best accommodated in a position where the trunk and branches are sheltered from the east and southeast. The Common Laburnum (*L. vulgare*) is not properly hardy in the Arboretum, except a curious crinkled leaved form known as var. bullatum, which may be seen on the right of Meadow Road near the Rose Acacia group. Laburnums variously known as Goldenchain and Goldenrain are, with the exception of *Koelreuteria paniculata*, the only trees with yellow blossoms that are hardy in the climate of Massachusetts. They are among the most familiar of lesser trees in the gardens of the British Isles and are always great favorites with American visitors. It is curious that a group so ornamental as this should be
so difficult to obtain from American nurserymen. Planted in a sheltered position, they demand no special care but as they never form new bark care should be taken not to bruise the trunk or main branches.

**Kolkwitzia amabilis** is now blooming profusely and proves worthy of its name Beautybush. The old original specimen on Bussey Hill was never richer in blossom; its daughter on the left side of Bussey Hill Road is more shapely and beautiful of habit. This plant, now six years old, is a perfectly symmetrical bush, fountain-like in habit some 7 feet tall and 9 feet in diameter, every branch being a plume of blossoms. The blossoms, due to the curious weather we have had this spring, are perhaps slightly smaller than last year. The flowers strongly suggest those of Abelia to which it is most closely related. They are pink without, mottled with orange on the lower lip and tube. The straight, pale gray hairs which cover the ovary and pedicel, add not a little to the beauty of the plant. There is a foolish rumor abroad that this plant when raised from seed does not blossom. The story is ridiculous since the original plants were raised from seed and the particular plant on Bussey Hill Road is also a seedling. Age is necessary; the plants must develop vigor and be about four or five years old before the first blossoms appear. Every year afterwards they flower more abundantly and at maturity no shrub produces more blossoms than does the Beautybush. Another canard in circulation is that it is an acid-loving plant. As a matter of fact, it will do equally well on a moderately acid soil or on limestone. What it needs is good strong loam and a fully exposed situation where it can enjoy plenty of sun and wind. It requires no more attention than do its near relatives, the Diervillas and Abelias, to which, however, it is superior in habit of growth and in beauty of blossom. Among the deciduous-leaved shrubs that central and western China has given to American gardens Kolkwitzia stands in the front rank.

**Syringa reflexa.** In the Lilac collection above the Forsythia group this very remarkable species of Lilac is now in flower. Its pendulous or nodding panicles of blossoms give the plant a very different appearance to Lilacs in general. In bud the flowers are almost red, becoming rosy pink as they open. The leaves are short petioled, oblong, each from 4 to 6 inches long and 2 to 2 ½ inches in width, dark green on the upper surface. It is native of the margins of woods and thickets of central China, where it was discovered and introduced into cultivation by E. H. Wilson in 1901. This species is as free-flowering as Lilacs in general are and while a good plant in itself it will in the hands of the hybridist doubtless prove the forerunner of new races. Nearby in the Lilac collection such species as *S. tomentella*, sometimes called *S. Wilsonii*, and *S. Sweginzowii* are also laden with blossoms. A visit to the collection at the moment will show the value of species in prolonging the Lilac season.

E. H. W.
On the Administration Building the Climbing Hydrangea (*Hydrangea petiolaris*) is now at the height of its beauty. The Beautybush (*Kolkwitzia amabilis*) is still in good condition. On Bussey Hill the new *Buddleia alternifolia* is in blossom, but the most beautiful plant at the moment on Bussey Hill is the Chinese Flowering Dogwood (*Cornus kousa chinensis*) which is worth coming a long distance to see. Many species and hybrids of Mockorange (*Philadelphus*) are in flower in the Shrub Garden and in the collection at the foot of the Lilac bank. Among the hybrids are many produced by the great French hybridist Lemoine, including the popular "Conquête," "Argentine," "Bannière" and "Virginal." The Rhododendrons in the opinion of many competent to judge have never blossomed more profusely or made a finer showing than this season. The rains, which followed the hot weather of last week, have been much to their advantage and the whole collection is a blaze of color. Brilliant also is the Flame Azalea (*Rhododendron calendulaceum*), the massed group on the west slope of Bussey Hill being a cataract of orange, yellow and scarlet; individual bushes planted here and there by the roadside are particularly striking and none more so than the variety *croceum* with its rich, chrome yellow flowers. A fine bush of this may be seen on the left side of Meadow Road near the group of *Cercidiphyllum japonicum*.

Rose species in great variety are in blossom in the Shrub Garden and are well worth a visit by all who are not irrevocably committed to the modern Hybrid Teas. The delicacy of coloring, the wealth of blossom and charm of the simple flowers of many Rose species are freely admitted; unfortunately, the petals are fugacious and the blooming season is a short one. However, a great many have ornamental fruits and quite a few have well-colored stems in winter.

*Rosa Roxburghii hirtula*. This is a Japanese variety of an old-fashioned double-flowered Rose which has been in cultivation since
1824 under the more widely known name of *R. microphylla*; many Rose lovers are familiar with it under the French name of Rose Châtaigne. The variety *hirtula* grows wild on the slopes of Mt. Fuji and other places in Japan; it has simple, clear pink blossoms, each from 2 to 3 inches in diameter with a central mass of clear yellow-anthered stamens. A shrub from 4 to 5 feet tall and more in diameter, it has stout stems clothed with a loose, peeling bark quite unlike that of Roses in general. The secondary branches are somewhat divaricate and are armed with stout, hooked, reddish prickles arranged in pairs. The leaves are small, with from 5 to 6 pairs of leaflets, each oblong-lance-shaped, 1/2 to 3/4 of an inch long by 1/4 to 3/8 of an inch wide and finely serrate. The flowers, solitary at the end of the branchlets, have a divided foliaceous calyx and a large, hemispherical ovary clad with stiff, bristly hairs. The fruit is depressed-globose, about 1 1/2 inches in diameter, bristly but without any marked color, looking more like a mossy Rose gall than a fruit proper. This variety makes a really charming shrub with its loose bark, divaricate habit, small, fern-like foliage and pleasing pink blossoms.

*Rosa bella* is one of the newer introductions from China, having been introduced by the Arboretum through its discoverer, William Purdom, in 1910. It is a bush 5 to 6 feet tall and about the same in diameter with ascending-spreading stems clad with relatively few straight prickles. The leaves are small, usually with 5 to 6 pairs of small, oval, finely-toothed leaflets. The flowers, each about 2 inches across, are a deep rose pink and borne singly or two or three together at the ends of short shoots; the color is good and the habit of the plant singularly attractive.

*Rosa rugosa*. This old-fashioned Rose long cultivated in western gardens is particularly well adapted for planting near the sea. The seacoasts of northeastern Asia are its home and on account of its large red, depressed-globose fruit it is known to the Japanese as a Sea-tomato. The type to which the name was applied has ugly, reddish magenta flowers and it is scarcely worth growing when compared with some of its descendants. Lovely is the variety *rosea* with 3 to 4 inch-broad pink blossoms produced in clusters at the ends of the shoots. The expanded flower is very conspicuous, but more beautiful is the bud, which is oblong, about 1 1/2 inches long and deep pink peering out from the relatively large green sepals. Similar in every way but with flowers of the purest white is the variety *alba*. These two ought to be grown by everyone who has a seashore garden since they are immune to the effects of salt spray and will grow in sand always supposing it be properly fertilized. In recent years the Rose hybridists, especially those of France, have given some attention to *R. rugosa* and the result is a group of hybrids of great ornamental value. They are free flowering and have large blossoms of white, pink and varying shades of red rather suggesting the old-fashioned Damask Roses in appearance. In the Arboretum each year their value becomes more apparent. For northern gardens the hybridist would be well advised to raise more of these most excellent hybrids.
Rosa Moyesii. Largely on account of the extraordinarily intense color of its blossoms few if any wild species of Rose have created so much interest as this native of the Chino-Thibetan borderland. At its best the color may be described as a rich, velvety crimson but it must be confessed that few authorities agree as to the actual color tone. Unfortunately, in this climate the flowers bleach rapidly and New England gardens will never know the real beauty of this Rose. On Bussey Hill two bushes may be seen in bloom at the moment. They have strong canes studded with stout spines and bear in profusion their richly colored 2-inch broad blossoms, singly or several together at the end of short shoots. Pollen is particularly abundant, and seems to have an overwhelming attraction to bees. This Rose produces in the autumn large scarlet hips which in this country are more attractive than its flowers.

Wistarias are the most popular and perhaps the most gorgeous flowering climbing plants that can be grown out of doors in New England. When Wistarias are spoken of the Chinese W. sinensis and the Japanese W. floribunda with their several varieties are usually understood; indeed, many people are unaware that there are two other species including several forms native of eastern North America. These were known to botanists before the Asiastic species were discovered and to them the name Wistaria was first applied. These American species flower on the current season's growth, have shorter racemes and rarely blossom so abundantly as do the Asiatic species. Of the two American species W. macrostachya has lovely pale bluish blossoms borne thickly together in pointed 6 to 12 inch long racemes which are often much hidden by the foliage. This is a rampant grower and needs to be kept in bounds by severe pruning each spring. There is a variety albo-lilacina with pale lilac tinted blossoms. The other American species is W. frutescens, a rambling plant of moderate dimensions bearing short racemes of lilac-purple flowers densely crowded at the ends of the branchlets. There is a variety niven with pure white blossoms. It cannot be said that these American species are as ornamental as the Asiatic sorts but they are hardier and will grow and flower freely in cold parts of the middle west and northern New England.

Spiraea nipponica is now in full bloom in the Shrub Garden. Better known as S. bracteata this Japanese species is entitled to rank among the first half dozen varieties of this popular tribe. It is a vigorous shrub growing 6 to 8 feet tall with ascending-spreading branches, making a shapely dome-like mass. The leaves are more or less broadly oval, each about ¾ of an inch long, rounded and slightly toothed near the apex, grayish green, paler on the under surface. The flowers are densely crowded in hemispherical, umbel-like racemes at the end of short erect shoots, transforming from 2 to 3 feet of each shoot into a plume of blossoms. Other Spiraeas now in bloom are the Korean S. trichocarpa and the Chinese S. Henryi which rank among the best for ornamental purposes.

E. H. W.
On Bussey Hill among the Barberries the Sun Roses (Helianthemum) make a fine display; several species of Cytisus and Genista laden with blossoms and late flowering Barberries, *Rosa multiflora cathayensis* with a number of miscellaneous plants add to the show of bloom. Nor must the Flame Azalea (*Rhododendron calendulaceum*) be overlooked for its flowers are still the most conspicuous in the Arboretum. The Mountain Laurel (*Kalmia latifolia*) is fast opening its blossoms and so, too, is the Seashore Rose (*Rosa virginiana*). The new *Buddleia alternifolia* is in full bloom; this Chinese plant, remarkable in having alternate leaves and in producing its flowers on the old wood, promises to be a valuable addition to the gardens of eastern North America. A native of northwestern China, it would appear to be the hardiest of all the Buddleias.

*Cornus kousa chinensis*, the Chinese Flowering Dogwood, is now in perfect bloom in the border devoted to the newer Chinese plants on Bussey Hill. The specimen is a vase-shaped bush about 18 feet tall with a spread of 15 feet; the branches are numerous, ascending-spreading with relatively slender secondary branches which give off innumerable short, lateral branchlets each of which terminates in a solitary flower head. The flowers proper are an insignificant crowded mass subtended by four, creamy white bracts, ovate and pointed and overlapping at the base, forming a cross some 3 to 4 inches in diameter. The leaves are fully grown when the flowers are open and are opposite, lustrous green, lanceolate-ovate, each from 3 to 5 inches long, somewhat leathery in texture, dark green above and pale on the under surface. The new shoots are purplish. The fruit is a conglomerase mass singularly resembling a strawberry. The bracts as they open are greenish and from the time they begin to change to white until they fall is a period of about a month, so for at least three weeks this plant is a mass of white. It blooms just as freely as the native *C. floribunda* and has the advantage of a foil of green leaves below the inflorescences, moreover, its blossoms open when those of the
native species are past. Native of the margins of woods and thickets of central China between elevations of from 4000 to 8000 feet, the Chinese Flowering Dogwood was introduced into cultivation by E. H. Wilson in 1901; it has proved perfectly hardy in the Arboretum, where it has been growing since 1907. The late Professor C. S. Sargent considered that of lesser trees this Dogwood was one of the greatest gifts of the Orient to the gardens of eastern North America. At the moment it presents a lovely picture worth coming a long way to see.

**Hydrangea xanthoneura** is a large bush or small tree with dark, prominently lenticellate bark and opposite oblong or oblong-lance-shaped leaves, each from 4 to 6 inches long and 2 to 2½ inches wide, sharply serrate, dark green above and prominently veined and sparingly hairy on the under surface. The flowers are borne in flattened, cymose clusters each from 8 to 12 inches across, the inflorescences being liberally interspersed with prominent four-partite neutral flowers. It is very free flowering and one of the most ornamental of its tribe. There are varieties, *Wilsonii*, which is distinguished by its two year old branchlets being grayish or pale brown and its more lustrous leaves, and *setchuenensis*, which has light brown branchlets, leaves as much as 8 inches long and villous on the under side. A related species with much more hairy leaves is *H. Rosthornii*. These Hydrangeas are natives of moist woodlands on the mountains of central and western China, where they are common plants between elevations of from 5000 to 9000 feet. Introduced into the Arboretum in 1908, they have proved perfectly hardy and amenable and for many years past have flowered freely. Their cultural demands are similar to those of the well known *H. paniculata* to which they are in every way superior. A number of specimens may be seen in the border on Bussey Hill.

**Styrax americana**, the American Storax, is in flower on Centre Street Path. Although this plant has been in cultivation in the Arboretum since 1883, it is really not properly hardy in the climate of Massachusetts and in severe winters it suffers considerably. This year it came through well and has never blossomed so freely. It is a bush growing from 6 to 10 feet tall with numerous ascending stems, forming a broad, twiggy mass of no particular shape. The leaves, each from ¾ to 2½ inches long, are dull green, perfectly smooth on both surfaces and vary in shape from oval to obovate-lanceolate and may be either entire or coarsely and remotely toothed. The flowers are both axillary and terminal on short, leafy shoots of the current season. The corolla is pure white, about 1 inch broad and cleft almost to the base into five narrow, spreading and recurved lobes. The filaments are white and the anthers pale yellow, adding much to the attractiveness of the plant. When flowering freely it is a very pleasing shrub and one wishes that it suffered less from winter frosts. This species is widely distributed from Virginia south to Florida and west to Missouri, Arkansas and Louisiana. There is also a variety *pulverulenta* which has leaves stellate-pubescent on both surfaces.
The Chinese Flowering Dogwood (*Cornus kousa chinensis*)
The genus Styrax is a large one, being represented by many species in the temperate regions of Europe, Asia and North America. In Mexico some ten species are known but in this country there is in eastern North America only one other species, S. grandiflora, and one, S. californica, in western North America, neither of which are in cultivation in the Arboretum, where they would not be hardy in any case. The best known members of the genus are those of Japan and China. The handsome large-leaved Japanese species, S. obassia, of which there is a fine specimen on Bussey Hill, is out of blossom, but the lovely S. japonica is now in full bloom among the Hickories on Centre Street Path. This is a deciduous-leaved tree, growing from 20 to 30 feet tall with a widespread crown made up of a mass of moderately stout branches and slender branchlets which are spread more or less horizontally. The leaves, usually oval and pointed at both ends, are from 1 to 3 1/2 inches long by 1/2 to 1 1/2 inches wide; they are dark glossy green and more or less toothed on the margin. The flowers are produced in great profusion, hanging solitary or several together from the leaf axils and ends of the short shoots; the corolla is about 1 inch in diameter, of the purest white and with five spreading lobes and prominent yellow-anthered stamens. Although tender when young, this tree is perfectly hardy when properly established. Like other members of its tribe it does not bear transplanting readily. The fine plant in the Arboretum was raised from seed collected in Japan by C. S. Sargent in 1892 and flowers and fruits freely each year, having done so for twenty years past. It is one of the most floriferous and beautiful of the lesser trees that can be grown in this climate. Unfortunately, the several new species discovered in China and introduced into European gardens have not proved hardy in the Arboretum.

Ligustrum acutissimum. The Privets are a useful if ordinary group of garden shrubs and in general are better employed as hedge plants than as individual specimens. Some of them, however, when in blossom are quite attractive and none more so than L. acutissimum which is in full bloom in the Shrub Garden and on Bussey Hill. This species is less dense in habit than many of its relatives, forming a loose, broad spreading mass from 6 to 10 feet tall and more in diameter. The shoots are hairy and each terminates in a panicked mass of pure white blossoms which are virtually inodorous.

Viburnum dentatum has been largely planted in the Arboretum and is now in full blossom in the collection and along the roadsides. It is a broad, round-topped shrub often as much as 15 feet tall and every branch terminates in a flattened round corymb of pure white flowers. The leaves are ovate, each from 2 to 4 inches long and 2 to 3 inches broad, coarsely toothed, lustrous dark green on the upper surface and gray below. The fruit is small, more or less ovoid and blue-black. Among native shrubs which flower in early summer none is a greater ornament to the landscape than this Viburnum.

E. H. W.
The spring and early summer seasons this year have been erratic and provoking; many shrubs and trees blossomed out of season, some of the early ones were late, and the late ones early, the net result being that in no other year have so many blossoms been displayed at one time in the Arboretum. But the season of bloom has been shorter than usual and now at the end of June comparatively few flowers are to be seen. A lush and vigorous growth on tree, shrub and vine and ample and luxuriant foliage are the chief features of the Arboretum at the moment. The copious rains have favored growth and it is a pleasure to walk around and revel in the health and good appearance of virtually everything. The luxuriance of the vines on the trellis in the Shrub Garden and on the walls is really tropical in its richness. Quite apart from its wealth in species of woody plants, the undergrowth in woodland and thicket of New England and the abundance of strong growing vines are the features which always surprise overseas visitors since they are novel and quite absent from the European flora. Indeed, the vigorous and tangled growth of climbing plants suggests the tropics rather than temperate regions.

The rich green of a thousand and one trees and shrubs may be the dominant feature of the Arboretum at the moment but blossoms are by no means absent. Around the ponds, in the meadow and along Bussey Brook the native Sambucus canadensis is covered with its broad corymbs of white, fragrant blossoms. On Bussey Hill several of the Broom family, including the erect growing Genista nigricans, are laden with yellow blossoms. Late flowering Barberries, like Berberis polyantha, B. aggregata, its variety Pratti, and B. thibetica, are in full bloom. The Swamp Honeysuckle (Rhododendron viscosum) and its crimson-stamened relative (R. arborescens) are at the height of their beauty and in the morning and evening especially fill the circumambient air with rich fragrance exceedingly pleasant to the nostrils. The late flowering Spiraea Veitchii is a perfect vase of almond-
scented blossoms. This Spiraea, the last of its tribe to open its flowers, has been mentioned many times in these Bulletins and deservedly so, for it is undoubtedly one of the very best of the tribe.

In the Shrub Garden and on Bussey Hill pink blossomed Indigofera Kirilowii and its white flowered relative (I. decora alba) are now in full blossom, their upright racemes and relatively large flowers being conspicuous among the soft green foliage. These are two excellent low growing plants suitable for the rock garden or as groundcovers in sunny, well drained situations. In warmer climates they make bushes 3 or 4 feet tall but are possibly less beautiful in that condition. Rose-pink flowered I. amblyantha and its variety Purdomii are in full bloom. The flowers on both these plants are small but abundantly produced and, moreover, the racemes continue to elongate and put forth blossoms over a long season.

The group of Bay Laurel (Rhododendron maximum) under the lee of Hemlock Hill is in blossom. This native species is, of the true Rhododendrons hardy in the Arboretum, the last to open its blossoms. They are small and much hidden among the foliage, nevertheless, this plant is worth growing for its foliage alone and where properly placed in cool, shady spots its handsome leaves are attractive at all seasons. When planted in sunny situations or where it is exposed to dry winds this species suffers from the ravages of Lace-wing Fly more than any other Rhododendron. This pest does much damage to the leaves of Kalmia latifolia and to those of hybrid Rhododendrons in general if they happen to be planted in exposed situations. In the shade and cool atmosphere of woodlands the Lace-wing Fly scarcely puts in appearance, a point of much importance to all interested in the welfare of our finest broad leaved evergreens.

On the left side of Meadow Road the broad group of the Smoke-tree (Cotinus coggygria, better known as Rhus cotinus) is laden with its feathery wigs. This old-fashioned shrub has long been a favorite in gardens but the typical form is much inferior to the variety purpureus which well describes the color of the fuzzy panicked masses of hairs. Many Bush Honeysuckles are fast ripening their yellow and red berries and from now until December there will be in succession species of this tribe bearing ornamental fruits in the Arboretum. Many of the Rose species are past blooming but the Chinese Rosa multiflora cathayensis both on Bussey Hill and in the Shrub Garden is covered with panicked masses of clear pink blossoms in which bright yellow anthers are prominent. This wild parent of Rambler Roses is in itself a highly ornamental climber perfectly hardy and good natured. It is much more showy than its white blossomed relative, the typical R. multiflora. The gray leaved R. multibracteata with its clustered masses of pink blossoms is also in bloom on Bussey Hill. Here and there by the roadsides throughout the Arboretum, and more especially alongside Meadow Road near its junction with Forest Hills Road, the Seashore Rose (R. virginiana) is still in plenteous bloom. For border planting and, indeed, for many other purposes this native
The latest Viburnum to blossom is *Viburnum pubescens Canbyi*
Rose is well worth attention. Its blossoms, pink and of good size, are fragrant and though fugitive are borne in great profusion. The foliage is good and in the autumn scarlet hips adorn the plants; added to this during the winter season are the naked crimson stems. Its requirements are simple, nothing more being needed than cutting away each year the three year old stems. This with a little extra food results in a border of healthy, floriferous plants.

**Viburnum pubescens Canbyi** is the last of the Viburnums to blossom. This native species is found throughout Delaware and Pennsylvania and is a large, rounded shrub often 15 feet tall and much more in diameter, dense in growth with leafy branches from the ground upward. The leaves are broadly ovate to rotundate, each from 2 to 2½ inches long and wide, rounded and coarsely toothed, lustrous on the upper and gray-green on the under surface. The flowers borne in erect, flattened, cymose corymbs, each from 2 to 4 inches across are creamy white with prominent anthers. They are followed in the autumn by small, ovoid, blue-black fruits.

**Platyosprion platycarpum** is flowering in the Arboretum and this is probably the first record of its blossoming under cultivation. A rare Japanese tree, it is found scattered on the mountains from the latitude of Tokyo south and is occasionally met with as a planted tree about temples. Under the various generic names of Sophora, Cladrastis, Styphnolobium and Platyosprion this tree has several times been reported as growing in western gardens but on flowering has always turned out to be *Sophora japonica*. The plant in the Arboretum is one brought from Japan in 1919 by E. H. Wilson, who secured it from a partially abandoned nursery in Yokohama. Platyosprion is a monotype related to Cladrastis from which it differs in having stipellate leaflets and a pod prominently winged on both margins; the leaflets are also more remotely alternate and the same color on both surfaces. Our plant is only a tall bush but in a state of nature Platyosprion is a tree up to 65 feet tall with a trunk 10 feet in girth, clothed with smooth, pale gray bark; the branches are stout, spreading, forming a more or less flattened crown sometimes 50 feet through. The leaves are stalked, deciduous, many foliolate, each from 6 to 10 inches long, 4 to 6 inches wide; the leaflets are alternate, petiolulate, stipellate, elliptic-lanceolate or ovate, each from 1½ to 4 inches long, ¾ to 1½ inches wide, oblique, rounded or cuneate at the base, bright green on both surfaces; the petiole is from ½ to 1½ inches long and sheathing at the base. The pea-shaped flowers are white, very numerous, borne in erect, terminal, much branched, pyramidal panicles, each 10 to 15 inches high and broad, at the end of the current season's growth; the calyx is clothed with appressed, lustrous yellow-brown hairs; the corolla is about ¾ of an inch long with a reflexed, emarginate standard shortly clawed at the base; the wings are oblong, as long as the keel, and the stamens are very slightly united at the base, of unequal length and up-turned at the apex. The fruit is pendulous, flattened, 1 to 3 seeded, oblong, 1½ to 3 inches long, narrowed at both ends with prominent marginal wing on either side.

E. H. W.
Rhododendron viscosum and R. arboreum, the last of the Azaleas, are now virtually over for the season but their few remaining flowers still scent the air. Summer flowering Spiraeas like S. japonica, S. bumalda and its brilliantly colored variety Anthony Waterer with flat corymbs of flowers and S. Menziesii, S. Douglassii, S. latifolia and S. salicifolia with their upright panicled masses of flowers are in bloom. So, too, are late flowering Barberries like Berberis aggregata and its variety Prattii and the Prairie Rose (Rosa setigera), last of the Rose species to blossom. Unusually early is the Heather (Calluna vulgaris), of which the forms alba, rubra and tomentosa are in bloom in the Shrub Garden and on the bank on the left of Valley Road. On Bussey Hill different species of Acanthopanax and late flowering Brooms are in flower while Stewartia pseudocamellia and S. koreana are covered with their cupped Camellia-like blossoms. The last of the Dogwoods, the Chinese Cornus paucinervis, is also in full bloom; in warmer climates this species is evergreen or sub-evergreen and owing to the lateness of its blossoming it is well worth growing. On the Administration Building the climbing Schizophragma hydrangeoides is at the height of its beauty. On the right of Meadow Road the honey-scented Lindens fill the air with fragrance, the wealth of blossoms on Tilia japonica and its European relative T. cordata being especially noticeable.

Stewartia koreana, mention of which was made in these Bulletins last year, is flowering much more freely this season: the plants have grown well and increased in size. The behavior this year of this new Stewartia supports the favorable opinion first formed that for the climate of Massachusetts it is the best of its family. The flowers are pure white, saucer-shaped and each 3½ to 4 inches across, the center being aglow with a mass of yellow stamens. When fully opened the petals spread almost at right angles and each is slightly fringed. The larger, much less cupped blossoms are more conspicuous than those of its Japanese relative S. pseudocamellia. The American S. pentagyna
with white filaments and golden-brown anthers and its larger flowered variety (*grandiflora*) with purple stamens are the only other species of the genus which have proved hardy in the Arboretum.

**Yucca flaccida** and its varieties *patens, glaucescens* and *variegata* together with *Y. filamentosa* are now blooming freely in the Shrub Garden. These commonplace but handsome evergreens are well worth a place in the garden; they thrive in almost any position except bog land and, moreover, will stand a considerable amount of abuse. Their creamy white blossoms are borne in erect panicked racemes each from 2½ to 6 feet tall and present a very striking picture. They are best seen in bright moonlight when the flowers are fully open welcoming night flying moths by whom pollination is effected. These two species, both native of southeastern United States, are with *Y. glauca* and its varieties from the Central Plains the only members of the genus that have proved hardy in the Arboretum. Adam's Needle, the popular name for these plants, is derived from the spiny apex of the leaf which is characteristic of most of the species.

**Sumacs** in several species are features of the countryside of eastern North America. In the summertime their gross growth may attract but it is in the fall when clothed in intensely colored autumn foliage that they arrest attention on every hand. Possibly on account of their rank growth they do not receive the attention in gardens that their ornamental qualities warrant. Sumacs are members of the genus *Rhus*, a tribe widespread throughout both hemispheres and one containing such valuable economic trees as the Chinese Varnish Tree (*R. verniciflua*) and the Japan Wax Tree or Red Lac Sumac (*R. succedanea*). Unfortunately, a number of the species possess poisonous properties, of which the most familiar example is the Poison Ivy (*R. toxicodendron*). The Sumacs in general, however, are innocuous members of the tribe.

**Three species** common in New England and widespread through other parts of the United States are *R. typhina*, *R. glabra* and *R. copallina*, respectively the Staghorn, Smooth and Shining Sumacs. The two first-named are similar in general appearance but well distinguished by their shoots and inflorescences which are hairy in the case of *R. typhina* and perfectly smooth in that of *R. glabra*. These produce in early July terminal panicked masses of greenish flowers which are followed by reddish crimson fruits. For the edge of woodlands, the wild garden and for clothing gravelly places both species are useful. The best way to treat them is to cut the old stems to the ground each spring; by this means a vigorous young growth, dense and attractive will be formed. Though usually bushes, both species will under favorable circumstances grow into small trees.

In rocky places and especially in old pastures *R. copallina* forms a thick growth of stems each from 2 to 5 feet tall clothed with lustrous green, pinnate leaves, the rachis of which is winged. The inconspicuous flowers are greenish yellow and it is in the autumn when the fitness of the specific name is clearly demonstrated. At this season the leaves
Latest of the Azaleas to blossom is *Rhododendron viscosum*. 
look as if they were varnished with the richest tones of orange, scarlet and crimson. Of all the lesser shrubs of the countryside none has more brilliantly tinted autumn foliage than this Sumac.

**Rhus javanica**, better known as **R. Osbeckii** and **R. semialata**, is an Oriental species long cultivated in western gardens. In a wild state it is frequently a tree 25 feet tall with a trunk 2 feet in girth and a widespreading flat-topped crown. The leaves, pinnate with a winged rachis, are each a foot or more long but fall in the autumn without attaining any marked brilliancy. In late July each shoot terminates in a broad pyramidal mass of pure white blossoms and the garden value of this Rhus is evident. Flowering when there is a scarcity of blossoms in the garden, this tree has unusual value. This species is widespread throughout China, Korea and Japan and other parts of eastern Asia and is perfectly hardy in Massachusetts.

**Rhus verniciflua**, better known as **R. vernicifera**, is perhaps the most important member of the genus, furnishing as it does the varnish which as Chinese lacquer is famous the world over. Unfortunately, this varnish possesses poisonous properties and its method of application is not well understood outside of China, Korea and Japan. Its use is, therefore, confined almost entirely to those lands. This species of Rhus is perfectly hardy in the Arboretum, where it has been growing since 1887. In a native state it is a tree from 25 to 60 feet tall with rather sparse, whorled branches, clustered handsome pinnate leaves, each from 1 to 2½ feet long and large, drooping axillary panicles of greenish flowers which are followed by yellowish white fruits rich in fatty oil. It is wild on the mountains and abundantly cultivated along the margins of fields particularly throughout central China. When the tree has attained a diameter of about 6 inches, tapping for varnish commences, and this operation is continued at intervals until the tree is 50 or 60 years of age. If the tapping is too severe, or the tree too young, injury or death ensues. The operation is begun in late June or early July at a time corresponding with the opening of the flowers, and is continued throughout the summer. Oblique incisions from 4 to 12 inches in length, and about 1 inch in width, are made in the bark of the tree down to the wood, and the sap which exudes is collected in shells, bamboo tubes, and similar receptacles. Wooden pegs are driven into the trunk to facilitate climbing, in order to reach the main branches. The tapping is done early in the morning and the sap gathered from the receptacles into which it has flowed from the incisions each evening. In showery weather it dries rapidly, and often has to be scraped away. The sap continues to exude from the wound for about seven days and then a fresh, thin slice of bark is removed, which causes another exudation. This is repeated seven times with an interval of about seven days between each operation. After being tapped, the tree is allowed a period of from five to seven years to recover; the old wounds are then reopened and fresh ones made. A large tree will yield from five to seven pounds of varnish which as it exudes is pure white but quickly oxidizes to grayish white, changing to black.

E. H. W.
In the fourth week of July lush growth rather than blossom is the feature of the Arboretum. The splendid rains we have enjoyed during the month have done untold good to the collections in general, indeed, a more favorable season for the Arboretum is scarcely on record. It is a pleasure to walk about the grounds and note the splendid growth that tree, shrub and vine have made, and granted favorable weather the autumn coloring should be unusually good. On the right of Meadow Road handsome Koelreuteria paniculata with erect, broad, terminal panicles of clear yellow blossoms is conspicuous from afar. Under the lee of the wood behind the Buckeye group the late flowering Aesculus parviflora is covered with a myriad upthrust candles; in the Shrub Garden the different species of Hypericum are in bloom and so, too, are one or two sorts of late flowering Barberries. Different species of summer blooming Spiraeas are in blossom and also Hydrangeas in variety. On the trellis and on the boundary walls the vines have put on a growth almost tropical in vigor and luxuriance. Heather is in blossom in many places, and among the Kalmias at the foot of Hemlock Hill, the Sorrel-tree (Oxydendrum arboreum) is laden with terminal panicles of white, urn-shaped flowers. On Bussey Hill the pink-stamened Albizzia julibrissin rosea is flowering more freely than before. Last season we called particular attention to this unusual plant; this year it is even more beautiful and at the moment is worth coming a long distance to see. Its fine fern-like leaves are perhaps more lovely than those of any other shrub or tree that can be grown out-of-doors in this climate. The discovery and introduction of this hardy type of Silk-tree was indeed fortunate. Among the group of Kaempfer’s Azalea on Bussey Hill the American Stewartia pentagyna and its purple-stamened variety grandiflora are in bloom; also the Japanese S. pseudo camellia and the Korean S. koreana, the latter being the finest of the group.

The genus Vitis, to which all the true Grapevines belong, is widespread in both hemispheres, being well represented in the United
States. On the trellis in the Shrub Garden all the species that are hardy in this climate are growing and at the moment are remarkable for their vigorous, rampant growth and abundant foliage. Many species are noteworthy ornamental plants which not only in their luxuriance of growth give a tropical aspect to wall, fence and pergola wherever they are planted, but late in the year a wealth of vivid autumn coloring. The handsomest of all is the Japanese Vitis Kaempferi, more widely known as V. Coignetiae. This has broad, roundish cordate, netted leaves, dark green on the upper and clothed with a russet-gray tomentum on the lower surface. In its native habitat it scales to the tops of the tallest trees, forming dense mantles of green in summer and vivid splashes of red to crimson in the autumn. The fruit is perfectly round, jet black, of good size but very harsh in flavor, nevertheless, on account of its hardiness one would suppose that this species has value to the grapevine breeder.

Ampelopsis aconitifolia and A. brevipedunculata are two graceful vines remarkable for the elegance of their finely divided foliage and for the lovely color of their fruits; both are natives of northeastern Asia and perfectly hardy even in the coldest parts of Massachusetts. They are well suited for draping trellis or pergola where from late spring until the fall they are most attractive subjects. In A. aconitifolia the fruit at maturity is orange-yellow but before attaining this stage it passes through shades of blue. In A. brevipedunculata, better known as A. heterophylla, the leaves vary from ovate-cordate and three-lobed to deeply laciniate but are not so finely divided as those of A. aconitifolia. The fruit of A. brevipedunculata at maturity is porcelain-blue and as it ripens changes from green to white and pale lavender. Another related species native of northern China is A. humulifolia which has reddish stems, leaves dull green on the upper and glaucous on the lower surface, and pale yellow or pale blue fruits. These plants may be seen on the trellis in the Shrub Garden.

Actinidia arguta is an old-fashioned climber of great value in gardens where it may be used for all the purposes that a strong growing vine is useful; also it may be clipped to form dense goodlooking hedges. Such hedges are a feature of many an estate at Bar Harbor, Maine, and one wonders why its use for this purpose is not more general. It is a strong growing plant with scaling bark and prominently lenticellate branches; the leaves on long, reddish petioles, are more or less ovate, long pointed and sharply serrate, each from 2 to 5 inches long and 1½ to 3 inches broad, dark shining green on the upper and paler on the under surface. The flowers, white or nearly so, have a prominent mass of stamens in the center. As in all species of Actinidia they are of two kinds, one purely male and the other perfect. The latter produces fruit in great quantity; the fruit, each about an inch long, is ellipsoid, greenish yellow or tinged with purple when perfectly ripe and palatable to the taste. For the making of jellies it is to be recommended. This Actinidia is found wild in many parts of Japan and Korea and the genus itself is purely east Asiatic.
Polygonum Aubertii, the Fleece Vine, is opening its panicled masses of white blossoms on the fence near Walter Street Gate. A comparative newcomer having been introduced into cultivation in 1899, its beauty has quickly brought it into popularity. Flowering in late July and through August when there is little in blossom it is doubly welcome and being perfectly hardy and easily grown is destined to become one of the most widely planted vines. A slender stemmed plant which grows from 5 to 8 feet a year, it produces foot long masses of blossoms at the end of every shoot. Each flower is triangular in shape, white with a greenish center, changing to pink as the fruit commences to ripen. A native of extreme western China, it is by no means a common plant in a wild state. A near relative (P. baldschuanicum), native of central Asia has been known in cultivation since 1883, but for some unknown reason does not flourish so well in eastern North America as does P. Aubertii. The Polygonum family is widespread throughout the world but nearly all are herbs, many rank of growth and others mere weeds. These two climbing suffruticose species, however, are among the choicest and most graceful vines growing in the Arboretum.

Hydrangea quercifolia is a native of eastern North America, being found wild from Georgia to Florida west to Mississippi. It has been known in gardens for more than a century, but for some unknown reason has not attained the popularity it merits. A shrub of spreading habit, growing from 5 to 8 feet tall and broad, it is from late spring to autumn densely clothed with long stalked leaves, each from 6 inches to 1 foot long by 5 to 10 inches broad, netted, dark green on the upper and gray on the lower surface. The margins are coarsely toothed and incised like those of a Red Oak leaf, hence its specific name. The flowers are borne in large panicles at the end of the current season’s growth, each inflorescence being from 6 to 15 inches long and well sprinkled with four-partite, showy, neuter flowers. However, did it not bear blossoms, this Hydrangea would be worth growing for its handsome foliage. Other native species of Hydrangea now in blossom are H. cinerea, H. radiata, and H. arborescens and its many forms, all of which may be seen in the Shrub Garden.

Lonicera tatarica lutea in the Shrub Garden and in the collection near the Philadelphus is now weighed down with its translucent orange-colored berries. Like its relatives, this is a large growing bush sometimes 10 to 12 feet tall and more in diameter with ascending-spreading branches bearing in the axils of every leaf a stalked cluster of brightly colored fruits. All the forms of this old-fashioned bush Honeysuckle are worth growing for their fruit alone, but none is more conspicuous at the particular moment than the variety lutea. Two other noteworthy varieties, each with deep, shining red fruits, are angustifolia with lance-shaped leaves and sibirica with elliptic-ovate leaves. The bush Honeysuckles are fruiting abundantly this year, but, unfortunately, starlings, whose gluttony is surely unmatched in the whole bird family, are fast devouring the berries; not content with what they can eat they squander all they possibly can on the ground beneath.

E. H. W.
The first week of August finds the Arboretum badly in need of rain and many plants suffering from the effects of heat and drought. While both spring and summer have brought a moderately good rainfall this has not been sufficient to offset the lack of snow during the winter months. A much longer period of drought last year saw plants less distressed than they are at the present time. In the Arboretum fruits are ripening on tree and bush and vine but flowers are scarce. The Silk-tree (Albizia julibrissin rosea) is still in bloom on Bussey Hill and Heather (Calluna) continues to make a fine display, especially in the Shrub Garden and among the Azaleas on Bussey Hill. Different species of Hypericum are covered with yellow blossoms, the Pepperbushes (Clethra) fill the air with fragrance, the gaudy Trumpet-vine (Campsis radicans) is flowering profusely on the trellis in the Shrub Garden, where the Pea-bush (Lespedeza spp.) and Hydrangea paniculata in its different forms are opening their blossoms. The Pagodatree so-called (Sophora japonica) is in full bloom, and flower buds are showing on handsome leaved Acanthopanax ricinifolius and on Hercules' Club (Aralia chinensis). The tree foliage is in splendid condition and the vines on trellis and walls could not be more luxuriant; shrubs, however, are feeling the drought and this is particularly noticeable where they are growing in close proximity to trees.

Clethra alnifolia, the common Pepperbush, is one of the most abundant and one of the most fragrant shrubs native of eastern North America, being found from Maine to Florida and at this season of the year the countryside is fragrant from its myriad blossoms. While it is usually found in woodlands and often in moist places it is a very accommodating plant, doing well in almost any situation where the soil is acid. It is a shrub from 6 to 12 feet tall and more in diameter, with very many upright stems forming a rounded mass; the leaves, more or less oblanceolate, each from 3 to 5 inches in length, and serrated along the margin, are lustrous, shining green on
the upper surface. The flowers are white with prominent yellow-brown anthers and are borne many together in erect terminal racemes which may be simple or panicled. Usually this plant suffers from the attacks of red spider but this year for no apparent reason it is remarkably free of this pest.

* Clethra acuminata *, a native of the southern Appalachian Mountains, while less conspicuous in blossom than other species that are hardy in the Arboretum, is worth growing for its polished smooth, cinnamon-brown stems. In this respect it is not a bad substitute for the Madrona of California. It is a bush or small tree of rather open habit sometimes 20 feet tall. The leaves are long-pointed, dull green, prominently nerved, serrate and vary in shape from lanceolate to lanceolate-ovate. The racemes spread horizontally and the flowers are so arranged as to point downward; the calyx, pedicel and peduncle are covered with a grayish woolly tomentum.

* Clethra barbinervis *, the first of the Pepperbushes to open its blossoms is past blooming. This, the handsomest of the species hardy in the Arboretum, is a native of Japan, where it is found widespread on the mountains and more especially on the margins of woods and in thickets as a large bush or slender tree sometimes 40 feet tall with a trunk 5 feet in girth clothed with smooth, gray-brown bark. The leaves are long-pointed, more or less oblong-ovate in shape, each from 3 to 5 inches long, sharply serrate and pubescent on both surfaces. The flower clusters are panicled and spread horizontally and the individual blossom is larger and the panicle more showy than those of other species.

* Buddleia Davidii * in its several forms is an extremely useful August and September flowering shrub. In the Arboretum where it has not proved perfectly hardy the stems winter-kill each year, nevertheless, with a little protection the plant throws up stout shoots each spring. In a way winter killing is not a bad fault since it obviates the necessity for hard pruning absolutely essential in this plant for otherwise it becomes weedy in appearance. Planted in rich soil in a situation where it can enjoy abundance of water this plant will produce shoots 5 to 8 feet in length each terminating in a tail-like panicle of blossom from 18 to 30 inches in length; every lateral shoot also ends in a panicle of lesser size. Of the several forms * magnifica * with dark purple flowers and crinkled petals is perhaps the best; another excellent form is * superba *, characterized by its thick and very dense inflorescence. A native of central and western China where it is common in the stony beds of mountain torrents and in thickets, this plant was introduced into cultivation by E. H. Wilson in 1900. It quickly attained popularity and owing to the ease with which it can be propagated it is now found in gardens the world over. Butterflies are exceedingly partial to this plant and the fact has given rise to its being called the Butterfly-bush.
Japanese Pepperbush (*Clethra barbinervis*)
Vitex Negundo incisa, the Chaste-tree, may now be seen in full blossom in the Shrub Garden. This member of the Verbena family would be well worth cultivating for its leaves alone. These are long petioled, palmately five-lobed, each lobe being deeply dissected. The flowers are borne in erect, much branched paniced masses, each from 6 to 10 inches long, at the end of the current season's shoot; they are pale blue in color, prominently lipped and decidedly verbena-like in appearance. This Chaste-tree is native of northern China, Mongolia and Korea and is also found naturalized in the temperate regions of both hemispheres. In severe winters it suffers but although it has been cultivated in the Arboretum since 1890 it has not been killed outright. Each year it puts forth a great number of shoots forming a broad, rounded shrub 12 feet high and as much in diameter. It will grow in almost any soil but prefers a sunny, well drained situation. The typical V. Negundo has not proved hardy in the Arboretum.

Campsis radicans, otherwise known as Tecoma radicans and Bignonia radicans, the Trumpet-vine, is one of the most familiar of native climbing plants, having been cultivated since 1640. It is a handsome strong growing vine but its flowers are of a rather harsh shade of red. Much more pleasing in color are those of C. hybrida Madame Galen, which is a hybrid between the American species and the Chinese C. chinensis, alas! not hardy in New England. In the hybrid the flowers are a pleasing orange-red. This year owing perhaps to excessive heat these plants are flowering uncommonly well on the trellis in the Shrub Garden.

Lespedeza bicolor is in flower in the Shrub Garden and is well worth growing for the multitude of rose-purple blossoms it produces. Like the other Pea-bushes it is a plant of twiggy growth with three-foliolate leaves and pea-shaped flowers in abundance at the end of the current season's shoot. These August blooming plants are useful and may be well associated with herbaceous plants in a border. Of the several sorts in gardens L. bicolor and the late blooming L. formosa, better known under the erroneous name of Desmodium penduliflorum, are the best. Like other members of the tribe they are not particular as to soil and are valuable for clothing gravelly banks.

Hibiscus moscheutus, the Swamp Rosemallow, is a handsome suffruticose plant well suited for planting by the side of ponds and streams. The leaves are dull green, more or less ovate with three long-pointed lobes, dull green on the upper and hoary on the under surface. The flowers are handsome pale pink and borne singly in the axils of the upper leaves. A native of eastern United States, being found in swampy places from Massachusetts to Florida, it was in years past more popular in gardens than at the present time. On the margin of the small ponds several plants may be seen in bloom.

E. H. W.
Mid-September finds the Arboretum sadly in need of rain and although no serious damage has been done by the long continued drought its effects are very apparent. A few late blossoms may be found on bushes here and there in the Shrub Garden and elsewhere; on the trellis and walls the fragrant *Clematis paniculata* is a wreath of white; *Buddleia davidii* in its different varieties continues in blossom; *Lespedeza formosa* is weighed down with masses of reddish purple, pea-shaped flowers and a few blooms still decorate the Pink Siris (*Albizia julibrissin rosea*) on Bussey Hill. The vines on the trellises and on the walls are a most luxuriant drapery of green and a lovely picture at the moment is afforded by *Polygonum Aubertii*, the Fleece Vine, on the fence near Walter Street Gate. This plant has been in abundant blossom since July 20 and bids fair to remain in bloom until frost. No climber could be more floriferous and for a sunny situation either on trellis, pergola or fence none could be more useful than this newcomer from western China. Fruits of many hues are more conspicuous than blossoms. The Hawthorns on Peters Hill are particularly fine. All interested in this group would do well to pay the collection a visit. Whatever may be said of the multiplicity of species due to the critical study of the genus by botanists during the last thirty years none will deny that among the Hawthorns are some of the most useful as well as the most hardy of ornamental plants. Bits of autumn color are putting in appearance here and there. The leaves of the Woodbine (*Parthenocissus quinquefolia*) are a brilliant red and some of the Sumacs are displaying their orange, gold and crimson tints. The foliage of the Flowering Dogwood also is assuming its autumn color and bright scarlet clustered fruits nestle among it.

Crabapples at this season show their double value as ornamental plants. The collection at the base of Peters Hill, the plants on Bussey Hill and those on the left just within Forest Hills Gate are now laden with brightly colored fruits and are well worth a visit. Not only are the fruits beautiful but after frosts they afford welcome food to birds,
especially pheasants and their relatives. In all the Asiatic species, varieties and hybrids the color of the fruit is yellow or orange-yellow or some shade of red. Almost without exception each and every sort is worth planting where space permits. Among so much beauty it is invidious to make selection and individual tastes differ considerably. Possibly in fruit the loveliest of all is *Malus tominoides*, a comparatively newcomer from the Chino-Thibetan borderland. In habit this Crabapple is distinctly Hawthorn-like with interlacing arching branches forming a rounded fountain-like crown. The similarity is heightened by the foliage which is more deeply incised and more thorn-like than in any other species. The fruit is pear-shaped, each about 1/2 an inch long, bright red on the side exposed to the sun, orange-yellow in the shade and covered with a glaucous, waxy bloom, the combination being singularly beautiful. The fruit, each suspended on a slender stalk, hangs in clusters from base to tip of every branch, the whole set off by the abundant bluish green foliage. The flowers are pure white, open late and are less pleasing than those of some other species, but when in fruit there is no more beautiful Crabapple.

*Malus robusta persicifolia*, the Peach-leaved Crabapple, from northern China is now in full fruit on Bussey Hill. This is a broad, erect-spreading bush some 10 feet high and 15 feet in diameter with long-stalked, lance-shaped leaves, each about 3 inches long, long-pointed and finely serrate along the margin. The fruit is ovoid, about 1 inch in diameter, crimson with a glaucous bloom and produced in great quantity, as in other members of the tribe. A hybrid of unknown origin, probably between the Chinese Apple (*M. prunifolia rinki*) and the Siberian Crabapple (*M. baccata*), this Crabapple was discovered by William Purdom in 1909 when collecting in China for the Arboretum. Purdom sent seeds from which the plants were raised. The distinct peach-like shape of the leaves, the loose habit of growth and its wealth of large fruit make this a very distinct and desirable Crabapple.

The Cotoneaster collection on Bussey Hill is now at the height of its beauty, many of the species being laden with red or black fruits. One of the most beautiful is *Cotoneaster racemiflorus soongorica* with gray foliage and ropes of coral-pink fruits. This particular species is also handsome when in blossom. The low-growing *C. horizontalis* with frond-like branches is ripening its red fruits; its relative, *C. apiculata*, of hummock-like habit is liberally sprinkled with large, bright red berries. *C. Dielsiana* and *C. divaricata*, taller of growth, are also worthy of note. Perhaps the most attractive of all the Cotoneasters at the moment is *C. Zabelii miniata* with small clustered brilliant orange-red fruit. It is a graceful plant of twiggy habit with gray-green, oval foliage. This year the Cotoneasters have suffered much from fireblight, more so than in any previous season. No means of controlling this deadly pest is known, the only thing possible is to ruthlessly cut away all infected parts and burn them.

The *Viburnum* tribe is one of the most all-round useful groups of shrubs. Many are among the most familiar of flowering bushes in late
Cotoneaster racemiflora soongorica has coral-pink fruits.
spring and early summer and others give a great show of fruit at this season of the year. Among the most conspicuous in the Viburnum collection just within Centre Street Gate is the native *V. cassinoides*, a common shrub distributed over a wide area in eastern North America and worthy of more attention at the hands of landscape architects. It varies quite a little in habit; some of the plants have stiff and rigid stems, but in others the branches are slender and drooping. The fruit as it ripens changes from almost white to pink and finally deep blue, all the colors being present in a single cluster. A close relative is the familiar Nannyberry (*V. Lentago*) which has larger leaves, looser clusters of ovoid fruits which as they ripen change to a bright red, blue and finally jet black.

**Viburnum lobophyllum** is a strong growing shrub, ultimately 10 feet tall and some 8 feet in diameter with stout and sturdy, erect-spaying branches. The leaves are broadly ovate, each from 3 to 5 inches long and 3½ to 4½ inches broad, coarsely toothed with the veins prominent on both surfaces. The fruit is globose, bright red, produced many together in loose, flattened clusters which when ripe weight down the branches. It is a native of central and western China where it was discovered and introduced into cultivation in 1901 by E. H. Wilson. Related species with smaller fruits and less ornamental in character are *V. hupehense*, *V. betulifolium* and *V. ichangense*. It is a curious fact that in this country and in Europe there are no red fruited species of Viburnum other than those of the Opulus group. In eastern Asia, and especially in China where since 1900 a host of new species has been discovered, many have red fruits. Oldest and best known of the red fruited Asiatic species is *V. dilatatum*, which is also now in full fruit. Very remarkable is *V. dilatatum xanthocarpum* with fruit the color of old ivory and unique in the Viburnum tribe. *V. Wrightii* is Japanese and has broad, rounded ovate, deeply veined leaves and large, loose clusters of scarlet fruit. The red fruited Highbush Cranberry, typified by the old-fashioned *V. Opulus*, is a familiar subject but its relative, *V. Sargentii flavum*, with yellow translucent fruit is little known. All these Viburnums and many others may be seen in the group just within Centre Street Gate.

**Evonymus planipes**. Frequent reference to this lovely Evonymus has been made in these Bulletins and rightly so for of all its tribe none is more beautiful. The fruit is scarlet and hangs in clusters suspended on thread-like stalks from the axils of the current season’s leaves. Several plants of this Evonymus as well as those of other species are now in fruit in the group facing the Viburnum collection and also on the left side of Meadow Road near the Asiatic Cork trees.

E. H. W.
Planting Trees in Autumn. It is a very common and widespread idea that most planting should be deferred until spring, that autumn is a rather unsafe time to plant or transplant trees or shrubs and many other plants, and that spring is much to be preferred. In some exposures and with some kinds of plants, this is to an extent true, but much more depends upon the care taken in digging and handling the plants before resetting and the care taken in preparation of the soil and in the manipulation of the roots when making the final planting.

The transplanting or removal of plants from one nearby location to another is naturally a much simpler and safer operation than when they are transported for some distance and the actual conditions of previous handling are unknown. For, if roots are exposed to the sun or drying wind for even a few minutes when dug or during transportation, they are very likely to have the important slender, threadlike rootlets destroyed so that a new crop of these must be developed before the plant is able to become stabilized in its new environment. Conifers are especially sensitive to any exposure of roots to sun or drying winds. It must be remembered that these finer roots are the organs which take up water, etc., to carry on the functions of growth and the more and better preserved these are the more readily adapted will the new plant become when transplanted.

Besides actual care in digging and transplanting there are several other factors to be considered. If it can be avoided, most trees and shrubs should not be dug or planted in a really dry time unless facilities for thorough watering before and after planting are available. Wet soil causes minute earth particles to cling to the rootlets and so protects them when dug and when transplanted they should have good moist earth about them so that the rootlets may continue growth uninterruptedly. For these roots and rootlets must be able to function and supply a certain amount of moisture to the leaves, buds, branches and bark if the tree or shrub is to pass through the winter with little injury and be promptly responsive in the spring with
development of satisfactory growth. If autumn planting or transplanting is begun early in the season, before the season’s growth has well matured and leaves still persist and are green, it is well to pull off a large proportion of the latter so as to prevent excessive transpiration which must be drawn from the crippled roots. As a rule the larger the root area lifted with a plant and the corresponding allowance for root spread in the new location, not crowding or bunching the roots in an inadequate hole, the more satisfactory the results will be. It should be remembered that many trees have a spread of roots exceeding the spread of branches. Thorough tamping or tramping of the soil above and about the roots is essential, allowing no holes or air pockets, but leaving some loose soil on the top. Planting loosely, that is without making the soil really firm or packed about the roots, is often a cause of poor response in the transplanted tree.

In autumn planting much depends upon the earliness or lateness of the season when the work is done in any region having generally such severe winters as our New England and northeastern states. Of course, in milder regions transplanting may be carried on all through the winter. Where frost goes deep into the soil it is always best to plant fairly early in the autumn so that plants may adjust themselves before freezing. Heaping of some soil about the stems, bringing it well up above ground level for the winter is generally a good practice and, of course, there is advantage in mulching with leaves, strawy manure, etc. Not only hardy but some half-hardy or rather tender trees and shrubs may be planted in the autumn if the soil is removed somewhat on one side of the plant and it is bent over, pegged prostrate on the ground and given a good protecting mulch of leaves or straw. Very large trees should be preferably moved with large balls of earth which may be frozen to insure adherence of the soil to the root system. In spring planting it is not so important that the soil be removed with the trees, if that the roots are not allowed to become exposed and the soil is repacked firmly about them, as it was about the roots before removal.

These suggestions refer to ordinary fruit and ornamental trees and shrubs. Apple trees may be as well planted now as in spring. Cherry, peach and plum trees, commonly known as stone fruits, have the reputation of being less adapted to autumn planting but these also may be planted with comparative safety if the planting is done early rather than late. In planting at this time, especially with small plants on exposed ground, the greatest danger arises from freezings and thawings of the ground, with the consequent expansions and contractions, thus heaving or throwing the plants out of the ground. This may be obviated by proper mulching after the first real freezing of the surface soil.

On the whole it is doubtful whether there is any more loss of plants in careful planting in autumn than there is in the average spring work of the same kind. Much spring work is carried on so late that the plants to be set out have become weakened by premature sprouting which is checked or dies, necessitating a new development of buds
Tree Moving in the Arnold Arboretum
when weather has already become unfavorably hot, causing delayed
growth and general retardation of development throughout the season.
While autumn planting appeals or should appeal to the orchardist,
gardener and landscape architect, it may also be economically and
profitably practiced by the forester. In tests made at the Harvard
Forest at Petersham, when the University maintained a Forest School,
students planted some thousands of White Pine, in October, on unused
grassy pastures, using mattocks in making the holes or slits in the
turf. The next season showed a loss of less than one per cent. Labor
is also usually more available at this season than in the spring when
help is in much demand to compete with the on-rushing growth of
vegetation which is characteristic of our northern clime.

It is always well to keep in mind the fact that in proportion as the
root system is reduced in the process of digging and handling, it is
less able to care for the multitude of twigs and buds which had
developed under normal conditions. If all of these twigs and buds are
allowed to remain they may become more or less dry and devitalized
because the few remaining abbreviated roots cannot take up and
supply enough moisture or sap to keep the plant tissues and buds from
drying. This danger may be guarded against or counteracted by the
careful elimination of some of the branches and twigs, and the cutting
back of others to a bud or crotch. The plants are then in far better
condition to throw all energy into the remaining parts. This practice
applies to broad leaved or deciduous trees and scarcely applies to
hardy coniferous evergreens. In these pruning is hardly practicable
and more careful attention must be given to having and preserving
good roots in the transplanting process.

In our cold northern country autumn planting is usually better done
early, as soon as the wood is fully mature. But it may be carried on
until the latter part of November or the ground begins to freeze. In
exceptional seasons it has been possible to plant until well into
December. To move with a frozen ball of earth about the roots is
good practice, but plants should never be handled when branches are
frozen unless handled with great care. Whether or not planting is
done in the autumn it is an excellent plan to prepare the ground in the
autumn for planting which can only be done in the spring. The turning
of the soil, exposing it to the action of frost causes it to become finely
broken up and in better condition for planting in the spring. This is
especially true in heavy or clay soils. Where dynamiting holes for
tree planting is practiced it certainly should be done in the autumn
so that frost may complete the breaking up or disintegration of the
soil.

Our illustration represents a Limber Pine (*Pinus flexilis*) being
moved in the Arnold Arboretum on September 27, 1929. The root
system had been cut the year before by a narrow trench, which induced
a mass of fresh rootlets at the severed ends in preparation for
removal of the tree the next season. The root area was rather smaller
than generally advisable but the illustration shows how carefully they
were folded up and protected by burlap from injury by exposure to
sun and wind.

J. G. J.
Late Persisting Leaves on Deciduous Trees. Every autumn and winter we have such questions to answer as, "What species of New England Oak is it that holds its foliage into the late autumn or winter?" Other queries are propounded along similar lines. In regard to persisting dead leaves on deciduous Oaks it may be said that the phenomenon is not peculiar to any one species in this part of the country. It is a very variable feature in trees of the same species, depending on ecological conditions or environment, and in the cases of some introduced species upon inherited peculiarities acquired or developed in their native habitat.

This question of leaf persistence among deciduous trees is often considered by the planter or landscape architect in the selection of species for certain types of effective plantations. Of all the trees which call forth inquiries concerning these peculiarities of the leaves the Oaks are probably most often referred to. This is especially so of the White Oak (Quercus alba) but is applicable also to other species. On such trees the leaves persist in a dry and withered state far into the winter but it may be noticed that the leaves on the upper parts of the trees have dropped while those on the middle or lower branches may still persist. The shedding of leaves is naturally affected by their maturation and by the formation of the little cork cells which separate twigs from leaves as the latter ripen. On some trees it would appear that the leaves on the uppermost branches, having most light and air, attain more perfect maturity before being finally killed by freezing weather. They are, therefore, in good condition for their normal shedding. On those trees where growth has been prolonged because of some unusual local factor the leaves may not have completed their preparation for shedding before they are frozen and in such cases the withered foliage may persist long beyond the normal time for falling. Light frosts hasten the final process where leaves are practically matured, so that after such frosts we witness an un-
usual heavy fall of foliage, but where the leaves on lower branches persist beyond the normal falling of those ripened and sun-matured on the upper limbs it may be due to the fact that these shaded leaves were still green and unprepared for winter when overtaken by decidedly freezing temperatures. They may then persist through the winter months, the petioles being broken by wind action, leaving a ragged remnant on the twig instead of the smooth scars left in the process of normal ripening.

In general it may be said that young trees, developing vigorous growth, show a tendency to hold leaves longer than older trees of the same species. Very often it will be noted that trees of any particular kind when brought north from milder or southern climates, where the growing season is longer, show a tendency to prolong their growth, without ripening, into freezing weather. Trees from the mild, moist regions of Europe, where the growing season is long, may show a tendency to longer leaf persistence than northern North American species of the same genus. The English Elm (Ulmus procera, sometimes called U. campestris) and the so-called English Hawthorn (Crataegus oxyacantha) and its forms may be cited as examples. Sometimes the persistence of leaves is an indication of trouble or disease. A single branch with persisting dried leaves among branches normally healthy and early deciduous may indicate death or disease caused by some boring insect or other agency, causing the leaves to die before properly maturing and, therefore, to persist out of season. A broken or partly broken branch may show the same effect.

Protection of Tender Shrubs and Small Trees. There are many shrubs or small trees grown for ornament farther south which may also be grown as far north as Massachusetts, or even farther north, provided they receive special consideration and care. This has long been popularly recognized in the case of Roses grown in our gardens, some of which are decidedly tender and receive special attention when the garden is prepared for winter. The lack of hardiness in shrubs and trees brought from warm temperate regions is commonly due to their long-season growing habits, the wood not having a chance to ripen fully before being subjected to freezing weather. There are some so-called half hardy species of trees which may be grown in this climate if they are developed for two or three years before ultimately being planted out. When very young they appear to be more tender than when older. In treating such plants they should have first consideration as to location. This is quite as important as any protective covering in later years. The shelter of a wall is often decidedly advantageous, but this should be supplemented by a warm, well drained soil and a spot generally elevated rather than depressed. Low ground, where there is not only poor soil drainage but also poor air drainage, should not be chosen in selecting locations for tender or half hardy plants. In severe weather in winter the cold settles in the low pockets or depressions of the land so that it is really much more
*Gordonia alatamaha*, also known as *Franklinia*, a member of the Tea or Camellia family. Growth and flower production continue into October or November or until checked by freezing weather, when the still growing, sappy leaf and flower producing branches are killed by the cold, leaving considerable lengths of dead wood. Photograph taken in September 1929.
severe than on slopes and ridges which are only a few feet or a few yards more elevated. In the Arnold Arboretum the somewhat enclosed valley which includes the main systematic collection of shrubs and vines undoubtedly suffers much, in some winters, from the severe cold which settles over the area because of the poor air flow. After what is called a hard winter, perhaps ten or twelve below zero (Fahrenheit), the effect may be seen and appreciated by observing a horizontal plane in the upper end of the valley where Forsythias and the larger Japanese Cherries are located. Below a certain level the flower buds may be all or nearly all dead while above it, in a sharply defined horizontal zone, a beautiful crop of flowers develops. Such an object lesson plainly tells the story. Certain susceptible Japan Cherries, Peaches, Apricots, Forsythias and numerous other exotic plants, hardy enough in wood and leaf, would be failures if planted below a frost zone, as described, while above that they might be expected to be satisfactory as to flower and fruit.

A half hardy or doubtfully hardy shrub or small tree may receive good individual protection by bending the stems to the ground, pegging them down and covering them with a combination of leaves and soil. All doubtfully hardy shrubs or small trees should always have the soil well banked up about the stems in winter. Water should never be allowed to stand about such plants as it would on flat or depressed surfaces when the ground is frozen. A covering of leaves alone may be equally satisfactory but care should be taken not to have the covering too deep and heavy as there might result injurious heating and moulding. A mixture of soil and leaves has a tendency to obviate this danger. The bending over of such plants may be facilitated by removing some of the soil from one side and bending the plant over in that direction. As an example the Franklinia or Gordonia alatamaha, a native of Georgia, may be mentioned. While fairly hardy in some locations it is often doubtful whether it will endure where planters in the region about Boston would like to have it, but treated as suggested above it may be made to live and produce its interesting flowers every autumn. It is not generally known that we may even grow a small Sour Orange (Poncirus trifoliata) in this climate if a suitable location is chosen or if we take the trouble to give it special protection. This native of China commonly fruits well in the latitude of Washington, D. C. Hybridized with some of the hardier Oranges in cultivation there have been produced several forms or races producing fruit which may be used for some purposes and which may be grown much farther north than the usually recognized Orange belt. In preparing half hardy shrubs for their winter rest they may be pruned by removing dead or unnecessary wood, a process which often simplifies any covering operations. This applies particularly to vines, such as Grapes, which are laid down and protected. It is better for the plants, and is a decided advantage to the grower, to prune at this season rather than in spring.

J. G. J.

These Bulletins will now be discontinued until April of next year.
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ERRATA
Page 45, line 8 from bottom, for Genista read Cytisus.
Page 49, line 1, for R. arboreum read R. arborescens.
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