Dear Arnoldia Subscriber:

Over the past volume (41) you may have noticed some changes in Arnoldia. We hope that you have, and we hope that you find them to be improvements. The addition of color, and a more varied photographic format have helped to update our appearance.

The coming volume (42) will bring further changes, one of which will be a change in frequency of issue. As of January 1982, Arnoldia will be issued quarterly, rather than bi-monthly, in winter, spring, summer, and fall. The total number of pages per volume will remain the same. This will allow us more time to develop each number, while at the same time conserving resources. In addition to the four issues of Arnoldia annually, subscribers will continue to receive the annual report of the Arnold Arboretum, which will be published separately, beginning with 1982. Subscription prices will remain at their 1981 rate.

In addition to regular features by the Arnold Arboretum's distinguished horticultural staff, Volume 42 will include an issue devoted to the 17th century Dutch painter, Jacob van Ruisdael, and his contribution to the art of botanical representation. Written by Peter Shaw Ashton, Seymour Slive, and Alice Davies, this issue will be produced in conjunction with the Fogg Art Museum's exhibition of van Ruisdael's paintings, opening in January, 1982. Another issue will bring a special report on the state of the elm by Harvard Forest botanists Martin Zimmermann, D. N. Roy, and Dennis Newbanks.

As we look forward to coming issues, we invite you to join us in the excitement of discovering plants and horticulture through the pages of Arnoldia.

Sincerely yours,

Carl Lobig
Editor
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Shrubs for Hillsides and Embankments

GARY KOLLER

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Shrubs for Hillsides and Embankments

by Gary Koller

Anyone who has looked down from an airplane window on the face of modern America will know that it is a compromise: a crazy quilt knitting together the need for vast, regular surfaces on which to travel and to build, and the desire to maintain the natural beauty of what was once the great wilderness.

Grading the land for countless miles of mammoth airports or sprawling apartment complexes leaves scars that take the form of rocky embankments. These slopes are extensive and varied both in physical size and in the quality and depth of the soil. Rarely do we give a thought to the special problems created by these surfaces, but for the landscape architect, they are a constant concern.

After the bulldozers and grading machines have created a slope, the matter of greatest concern is how these slopes will be stabilized, how soil erosion can be controlled, and how the finished bank surface will be maintained.

Most often banks are planted with grass, herbaceous perennials such as crown vetch (Coronilla varia), or wild flower seed mixes. These plantings are largely unmaintained and through natural succession allowed to revert to a woodland condition.

In key locations or areas of higher visibility and use, trees, or masses of shrubs are planted as part of a landscape development scheme. In most cases there is little or no care given to these plant-
ings. It becomes essential, therefore, to select species and varieties for their ability to adapt to varied climatic, and environmental conditions. Too often, the developer selects plants for their ornamental value rather than those that would best survive. At the same time, landscape architects and developers are largely restricted to those plants that are commercially available. Other factors which influence selection include the size and quantity of the plants needed and the price, which must be competitive with, if not lower than, other methods of covering the slopes.

In selecting shrubs for bank plantings in North Temperate Zone locations, most landscape architects, nurserymen, and horticulturists limit themselves to the few old standbys such as: Cotoneaster spp., Forsythia spp., Juniperus spp., Myrica pensylvanica, Euonymus alata 'Compacta', Rosa rugosa, Rosa virginiana, or Rosa wichuraiana. These plants are all excellent choices for large-scale landscape plantings, as long as they are suited to the environmental conditions that exist at each individual site. In approaching the problem of selecting shrubs for hillsides and embankments, I chose not to reiterate a list of those plants already known, used, and widely discussed in the horticultural literature. Instead, I trekked through the Arnold Arboretum. Here, I looked for plants with the following characteristics: a crown, or foliage canopy, dense enough to suppress weed competition; a stoloniferous or twiggy branching system arising from soil level; suitability to mass planting and ability to interface well with adjacent plants; and longevity as well as vigor of regrowth and aggressiveness. Strangely enough, most of these are characteristics of successful "weeds." Ornamental traits, except crisp green foliage, were not even considered.

What follows is a compendium of the plants at the Arnold Arboretum which appear, from all indications, to have the desired qualities. I feel that they easily fit into the milieu of a bank or mass planting and should form dense, vigorous stands. However, without periodic maintenance, they cannot be expected to completely eliminate the encroachment of the area's natural vegetation.

Many of the plants listed are poorly known, even in botanical gardens and are rare, or in some cases impossible to find in the current American nursery trade. I offer my observations with the hope that these plants will be brought to the attention of people interested in testing them, in actual long-term, steep bank situations.

In the ensuing discussion, my observations are largely drawn from individual plants. Therefore, I expect the species and varieties to exhibit a variation in density, height, vigor and growth rate, as well as in their level of ornamental merit. Most of the plants would be enhanced by selecting individuals which have superior traits and then producing them vegetatively to maintain specific characteristics.

What follows is my list of the deciduous shrubs that I would suggest to stabilize hillsides and embankments.
Acanthopanax sieboldianus
fiveleaf aralia

Height: 6–10 feet
Spread: 6–10 feet
Environment: Sun to moderate shade
Hardy to −25°F.
Native to Japan

This ironclad shrub was once well known and much used as a landscape plant; however, it is seldom seen today and the reasons are not at all evident. While this plant could never be described as a showy ornamental, its superior traits include lustrous green, pest-free foliage; longevity despite neglect and abuse; and adaptability to shearing and shaping. Presently, when it is used, it is generally clipped as a hedge. However, it can be more beautifully used as a colony, when it is allowed to become an informal, impenetrable mass. It has the virtue of suckering freely from underground stems, and the attribute of bearing occasional spines at the base of a leaf or leaf cluster, thus discouraging pedestrian or large animal traffic.

The fiveleaf aralia tolerates drought and poor soils, dust, smoke and the difficulties of an urban environment as well as any shrub. Its growth rate is moderate. Use of this plant is feasible as it is currently available in the nursery trade. When one wants a plant with fresh, attractive foliage throughout the summer, Acanthopanax sieboldianus is a first-rate choice.
Aesculus parviflora
bottlebrush buckeye

Height: 10–12 feet
Spread: 6–10 feet or more
Environment: Sun to moderate shade
Hardy to -25°F.
Native to Georgia and Alabama

A flowering period in early July, clear amber autumn foliage colors and a multi-layered canopy make this a distinct and desirable plant for ornamental landscaping. Bottlebrush buckeye is a large, spreading shrub, with a rounded canopy which grades from a central high point down to the soil level at the outer perimeter. A clump resembles a grove of young trees planted closely together, and when established, repeats the contours of the planting locale. Large cylindrical clusters of small, white flowers appear in early to mid-July and look similar to the brushes used to clean bottles. Flowering occurs even on young plants. Fruit is infrequent, but when found consists of a small rounded nut, enclosed in a dehiscent husk, the ripening of which is eagerly awaited by squirrels.

Bottlebrush buckeye slowly creeps outward by stoloniferous stems. Growth, which is dense, eliminates the growth of most herbaceous plants and low shrubs, but occasionally a volunteer tree seedling will grow and overtop the mass. When desired these volunteers can be removed, or if the bottlebrush buckeye is used in a naturalistic setting, the trees can remain as companion plants, as the buckeye is shade tolerant.
From my observations, this plant is slow to re-establish itself after transplanting, but my experience is based on bare-root divisions rather than on container or field-grown stock. I am told by nurserymen that it is slow to work up to a saleable landscape size. The apparent slowness of recovery and growth will restrict its use to those locations where some weeding maintenance can be provided to help the colony establish density. Once established, bottlebrush buckeye is attractive and essentially trouble-free. I have heard of plants which exhibit the marginal leaf scorch so common to *Aesculus*; however, I have not seen this myself in the Boston area.

Landscape architects should consider using this in combination with trees as an outstanding cover for the low mounds frequently used as a device to screen industrial, municipal and institutional buildings. It would also be useful as a flowering shrub for summer resort and recreational areas.
Caragana frutex
Russian pea shrub

Height: 4–8 feet  
Spread: 6–10 feet  
Environment: Full sun  
Hardy to: -25°F.  
Native from Turkestan to Siberia

This tough shrub, which is almost unknown outside of botanical gardens, has several qualities to indicate that it might be a superb bank plant. It is relatively low-growing dense and vigorous, allowing no weeds to penetrate the upper foliage canopy. It is very persistent, requires little care to thrive, and it has tolerance for cold temperature rivaled by few other woody plants.

Ornamental qualities are limited to abundant quantities of small, bright yellow flowers which appear in early May. Branches are thin and delicate and the habit is more erect than Caragana sinica. New season twig growth is four to eight inches long and the branches are unarmed. Our plant, AA 20870, is four feet tall and twelve feet across, and the mature foliage is a dense and healthy, bluish-green. The younger foliage is lighter, and yellowish along the edge, which is perhaps a nutritional deficiency, rather than typical leaf color. There is a small amount of twig dieback evident but not enough to cause alarm. The general appearance of the plant from a distance is one of a flat-topped mass, well faced with foliage right to the soil level. Nurserymen believe that this plant would be a good choice for mass plantings, but because of the small demand it is not presently a commercially viable crop, and therefore, difficult to procure.
Caragana sinica
Chinese pea shrub

Height: 5–6 feet
Spread: 6–12 feet
Environment: Full sun
Hardy to −30°F.
(Northern range of hardiness still needs to be determined)
Native to Northern China

It is unfortunate that as horticulturists we tend to emphasize too much a plant’s ornamental qualities, ignoring its potential for adapting to difficult environmental niches. Caragana sinica, the Chinese pea shrub is a charming little plant which deserves more than the cursory review it has had in the past.

Caragana sinica forms a tapering mound which is dense and faces itself beautifully to the soil level. The older foliage has a dull luster and a rich green color slightly tinged with blue, while the younger leaves are smaller in size and yellowish-green. The leaf radius terminates in a sharp point giving the plants a somewhat spiny character which is retained even after the leaves have fallen. The branches are thin and wispy and somewhat uneven in their height, with an informal appearance. The summer foliage is better than on Caragana frutex and the plant appears more robust, with no visible signs of dieback or dead twigs. Flowers, which appear in May, are presented individually among the foliage and are yellow with a slight reddish cast.

The plant from which I drew my observations was collected in the wilds of Weichang, China in 1909, by W. Purdom. At 72 years of age, this plant is five feet tall and twelve feet across, forming a perfect tapering mound. While it is surrounded by a tall coarse grass, there is no evidence of the grass penetrating the upper leaf canopy of the plant, even at the outer edges.
At the Arnold Arboretum, this plant appears to have a dense robust habit. Perhaps this is due to the fact that it freezes back to the soil line almost every year encouraging more suckering from the root system. Our plants have coarse, dark green foliage, robust new growth from soil level and, due to the strongly stoloniferous habit, a dense bushiness directly to the ground. The plant bears small fragrant white flowers in late summer, followed by bright blue fruits the size of peas. The unique and intense blue fruit color is set off against the persistent calyx lobes which become more fleshy and crimson as the drupes ripen, making the plant visually striking when viewed from close by.

I have seen *Clerodendrum trichotomum* in areas where it has naturalized itself into the edge of woodlands. There, with shade, it becomes more open and less likely to quell vigorous weedy competitors.

In localities where this plant is not likely to die back each winter due to the cold, it would probably be best to cut the shrub back to the soil level annually or biennially in the spring to encourage the large, robust foliage which is common to sucker growth, producing a plant five to eight feet tall by summer’s end. With this plant, management techniques will clearly be an important factor in maintaining a dense canopy.

The harlequin glorybower is less likely to be a stellar success as a colony than others listed here, but I think it deserves a trial, for once established, it should colonize adjacent areas with its seed.
**Deutzia gracilis**
slender deutzia

Height: 3 feet  
Spread: 2–4 feet  
Environment: Full sun to light shade  
Handy to −20°F.  
Native to Japan

This “low maintenance” shrub is a superb choice for use in foreground plantings. In the home landscape it has generally been given a crew cut or misplaced behind taller or more robust plants, obscuring its outstanding characteristics. When grouped together and allowed to grow unclipped, this plant can be used to create a pattern or distinctly shaped area. It can also be used more informally. At maturity the plant has slender arching branches and forms a dense spreading mound. Due to its compact habit, it never gets out of bounds. Flowers, reliable in their annual May appearance, are borne in graceful terminal clusters.

Along the northern edge of this plant’s hardiness range, *Deutzia gracilis* may die back to the soil each year, but it will still form a robust mound of new stems by early summer.
*Diervilla sessilifolia*

southern bush-honeysuckle

Height: 3–5 feet tall  
Spread: 3–5 feet or more  
Environment: Full sun to moderate shade  
Hardy to −20°F.  
Native from North Carolina to Georgia and Alabama

*Diervilla sessilifolia* is a native American shrub with dense stoloniferous habit, modest size, adaptability to a wide range of light exposures and soil conditions, and a summer flowering period. Southern bush-honeysuckle will thrive under light conditions which range from sunny to those areas with moderate shade. In shade, the plant’s habit will change moderately, becoming thinner and more open and bearing fewer flowers.

The habit of the plant is mound-like, formed by loosely arching branches arising from the denser colony below. For new season growth, stem diameter is thin and the visual quality enhanced by branchlets of rich purple along the top or sunny side. In locations where the plant experiences physiological stress caused by drought or full sun, the summer foliage often takes on a purplish-red cast. During the autumn, the plant displays rich purple-bronze colors prior to defoliation. Small terminal flowers, clusters of which are pretty but not showy, appear in early to mid-July, on new season wood.

Southern bush-honeysuckle would probably exhibit best growth and density if mowed to the ground annually or biennially. *Diervilla sessilifolia* is presently offered by several of the nation’s large wholesale nurseries.
Indigofera kirilowii  
kirilow indigo

A delightful small shrub with erect stems and light green, pinnately compound foliage. Flowers which appear on new season growth in mid-June are a bright rose-pink, abundant, and persist for three to four weeks.

At the Case Estates of the Arnold Arboretum, in Weston, Massachusetts, there is a planting which was cut to the ground one autumn. During the winter the stem stubble and the fibrous root system were sufficient to prevent or reduce soil erosion. The following spring, new growth developed and the plant returned to its original height all in one season. The plant flowered, but a bit later than normal. As a result of this experience, we believe that kirilow indigo might best be managed by mowing annually or biennially. This mowing would have the effect of thickening growth and invigorating the plants, as well as eliminating the encroachment of woody weeds. A legume, kirilow indigo has the advantage of being able to fix nitrogen on sites with poor or impoverished soils.

Indigofera kirilowii is easily transplanted and should be an excellent subject for container growth in nurseries. In addition to being considered as a part of mass plantings, kirilow indigo should be viewed as a potential flowering shrub for low maintenance landscapes, or at resort areas where summer flowering plants are desired (see front cover).
Kerria japonica
Japanese kerria

Height: 3–6 feet
Spread: 3–6 feet
Environment: Full sun to moderate shade
Hardy to −20°F.
Native to C. and W. China

*Kerria japonica* of Japanese kerria is used only rarely as a mass planting on difficult banks or to colonize difficult planting sites. With creativity it could be used far more effectively. *Kerria* forms a dense, rounded shrub with slender arching branches. The thin stems remain green year round. This makes them somewhat showy in the winter landscape, when most shrubs are dull tan or brown and lifeless in their appearance. Foliage is a bright green in summer and in autumn it turns pale yellow.

The typical variety is useful for mass planting as it is dense and vigorously aggressive in colonizing a site. The floral color of the single flowered variety tends to be pale yellow. This color works well as an element in a naturalized planting scheme. However, they have a major disadvantage in that the flowers rapidly fade or bleach to white when the plant is grown in full sun. The full flush of flowers occurs in early May with the main flowering period lasting two to three weeks. However, scattered blossoms occur throughout the growing season.

Useful varieties include: *pleniflora* with double orange-yellow flowers, and less vigorous than the type; and *picta* which has leaves bordered with white markings, and normally grows only 24–30 inches tall. *Picta* is the least vigorous of the lot, and has a strong tendency to produce green branches which need to be removed lest they overtake the variegated form.

While *Kerria* is essentially maintenance-free, it does need occasional thinning and renewal pruning to keep the plant vigorous and the stems bright green and in peak display condition. The plant is listed as hardy to −20°F, but our plants exhibited dieback with a low temperature of −6°F during the winter of 1980–81, a year which was, however, both excessively drier and colder than many of the recent past.
Neillia sinensis
Chinese neillia

Height: 5–6 feet
Spread: 6-10 feet or more
Environment: Full sun to light shade
Hardy to −10°F (perhaps lower if more widely tested)
Native to Central China

It one were to point to a little-known plant at the Arnold Arboretum which has potential as a superior bank plant with fresh, attractive foliage all summer long, the first choice would be Neillia sinensis. This plant is little known and remains rare even in botanical gardens. Our plant was collected as seed from the wild in 1907 by E. H. Wilson at Hsing-sham Hsien, W. Hupeh, China. At 73 years of age, this plant is five to six feet tall and spreads sixteen feet across.

Neillia forms a dense, billowy, irregular mound with gracefully arching stems that brush the ground. The foliage is dark green and remains vibrant, healthy, and most attractive throughout the entire growing season. The young stems and leaf petioles are rich maroon above and green beneath. New season growth on our long-established plant varies from eight to twenty-four inches. This plant is so densely branched and so strongly stoloniferous that few plants can compete successfully. Chinese neillia is a type of plant which could be well suited to mass plantings down the median strip of a super-highway. Here it could successfully recover from mowing or accidental burning. The height and density of the plant should make it particularly useful in this application. A well-established mass planting could substantially absorb the impact and reduce the speed of a misguided automobile.

However, from an ornamental perspective, this plant has little to offer other than small, rose-pink cylindrical flowers. It is delicate and
attractive when in blossom but, the flowers are insignificant from a distance.

Our experience with container trials indicates that Neillia adapts well to this growing technique. Chinese neillia is easy to propagate from divisions or stem cuttings, and grows rapidly and adapts quickly to new growing locations — all attributes which give it the potential of becoming a popular item for wholesale nurseries (see back cover).

Prinsepia sinensis  
cherry prinsepia

Height: 7–12 feet  
Spread: 10–15 feet  
Environment: Full sun  
Hardy to −25°F (perhaps lower if more widely tested)  
Native to NW. China (Manchuria)

This large spreading shrub is among the first plants to leaf out each season at the Arnold Arboretum, providing a green spot in the midst of a still lingering winter landscape. The plant has a robust appearance with small leaves that vary from dark green to more yellow green. While it does not seem to be stoloniferous, it’s canopy and branching habit is extremely dense precluding the growth of most weeds. Branches which arise from the soil are stiffly upright until they reach about three feet in height, then they arch outward and sweep down towards the ground. Flowers and fruit are of little note; the autumn foliage color is a clear yellow.
Rhus aromatica
‘Gro-Low’
fragrant sumac

Height: 2½ feet
Spread: 4-6 feet
Environment: Full sun to moderate shade
Hardy to -35°F.
Native from Kansas to Minnesota, south to Florida and Louisiana

It is unfortunate that we view the sumacs as weeds. As a group they possess an aggressiveness, tenacity, and longevity shared by few other plants. They do vary considerably in height, density, growth rate, and ornamental qualities and, therefore, some selection will be helpful to integrate the best forms into the nursery industry.

Rhus aromatica, the fragrant sumac, forms a dense carpet which varies in its height and growth habit. One of the best forms presently available is a selection offered under the name of ‘Gro-Low’. This plant was selected and introduced by Ralph Synnestvedt and Associates, Inc., 3602 Glenview Road, Glenview, Illinois 60025. The following description is excerpted from their 1978-79 catalog: “Cutting grown selection. This plant spreads rapidly and stays low (30 in.); deep rooted, this plant is working well on highway banks.” A planting of Rhus aromatica was established in the ground cover trials at the Case Estates during the summer of 1978. The rooted cuttings, which were one or perhaps two years old, took three growing seasons to fill in completely. Growth became full and dense at the base and somewhat lighter and wispy at the top. However, the surface remained regular and even. There has been no noticeable insect, disease, or drought injury. This planting has attracted considerable attention from visiting landscape architects.
Rhus copallina  
shining sumac

Height: 20–30 feet  
Spread: 20–30 feet  
Environment: Full sun  
Hardy to -10°F.  
Native from Maine and Ontario to Minnesota, south to Florida and Texas

Rhus copallina is one of the most handsome sumacs. The summer leaf is a lustrous dark green followed by brilliant red autumn colors. Flowers appear in dense terminal clusters in July or August and are greenish-yellow in appearance. Shining sumac, a stoloniferous plant, is relatively compact in youth, but with age, becomes more open and spreading.

The landscape uses of this plant could be enhanced by the selection of superior forms. Unfortunately, this fine native plant is, at present, rarely offered for sale.
Several species of roses deserve recognition for their aggressive behavior rather than for their delicacy or floral effect. If vigor and aggressiveness are admirable traits in a plant, then *Rosa acicularis* should be a first prize winner. One of the notable accessions in the Arboretum’s collections is AA 17134, received as seed collected in 1909 near Boulder, Colorado. At 72 years of age, this plant is four-and-a-half feet tall, spreads fifteen feet and remains full and dense. It would consume a greater space if not for the fact that it is occasionally grubbed out to reduce the size of the colony.

Our plants form a mound with a somewhat irregular surface due to unevenness of branches. The mound tapers allowing the plant to be full and tight to the soil level. Summer foliage is a dull light green and the autumn foliage, a pale yellow. Rose pink flowers almost two inches across are borne singly and appear in great profusion for us in early June. Blossoms are followed by bright scarlet rose hips which are held on slender stalks. *Rosa acicularis* is an extremely variable plant. Some forms or races would undoubtedly be better as mass plantings on banks than other plants of the same species. While, as a flowering plant, this is not a superior rose, it certainly is superior to most of the roses presently offered for mass plantings.

In order to achieve the best effect, selections need to be made which are dense, aggressive, and as floriferous as possible.
**Rosa davurica**  
dahurian rose

Height: 5-8 feet  
Spread: 7-10 feet  
Environment: Full sun  
Hardy to -20°F (perhaps lower)  
Native to N. China and N. Korea

This rose is said to grow on the lower, sunny, stony parts of the mountains of Northern Korea, its native habitat. Our plant (AA 1177-1-A) was grown from a cutting in 1923, and at 58 years of age is five feet tall and spreads fifteen feet. This reflects severe pruning three years ago, as well as grubbing to control spread. Growth is dense, upright, and vigorous. Foliage is large and somewhat coarse. The dull blue-green foliage color is rich and vibrant, in its own way. The young, new season stems are a lime green and contrast with the foliage. Branches at the outer edge droop slightly allowing complete coverage to the soil level.

Flowers are single, rose to rose-purple, and they are followed by globular hips which vary from reddish-yellow to red.
**Rosa × malyi**  
maly rose

Height: 2–3 feet  
Spread: 5–10 feet  
Environment: Full sun  
Hardy to −20°F. (perhaps lower)  
Hybrid origin: Parents thought to be *R. pendulina* × *R. spinosissima*

A low growing, densely stoloniferous rose, maly rose is tallest in the center and tapers down to approximately one foot along the edges. Leaves are small and blue-green, and, as of the mid-July inspection, exhibited a tiny amount of powdery mildew. Flowers are solitary, single, and red. The hips are ¾ inches across, dull red, and smooth.

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**Rosa pendulina**  
drophip rose

Height: 3–6 feet  
Spread: 6–10 feet or more  
Environment: Full sun  
Hardy to −10°F.  
Native to S. and C. Europe

*Rosa pendulina* is more irregular in its habit than the other roses discussed. Our oldest plant was propagated from a cutting taken in 1905 and today is six feet tall and fourteen feet across forming a dense mound. Foliage is a dull, light green. Flowers are solitary, rose or rose-purple in color, and occur in early June. Fruit is oblong, nodding, bright red, and most attractive in the autumn landscape.
Rosa primula
primrose rose

Height: 5–8 feet
Spread: 6–8 feet
Environment: Full sun
Hardy to -10°F
Native from Turkestan to N. China

Of all the roses in the Arnold Arboretum’s collection, this is among the best for delightful foliage. The leaves bear nine to fifteen tiny leaflets giving a fine texture. Leaves are light blue-green, highly lustrous and in the wind or with intense sunshine, the foliage appears to sparkle. The vigorous young branches, as well as the thorns, are a bright red-purple and contrast handsomely with the delicate foliage.

This plant may not be as aggressive as the others included, but it certainly will hold its own against competition. Stems are thin, upright and dense. The greatest density is at the base with the upper area of the branches being less uniform in height and less dense. The overall effect of the plant is more square than mound-like, for the top is essentially flat.

Flowers appear early in the flowering sequence of our rose collection and are at their peak in late May. Blossoms are single, one-and-a-half inches across and pale yellow to yellowish-white; rose hips are small and turn red in the autumn. My description of the general character of this plant would include such terms as refined, sophisticated and desirable.
Rosa spinosissima var. altaica  
altai Scotch rose

Rosa spinosissima as a species tends to be a highly desirable shrub for colonizing banks. However, it has a wide natural distribution and, therefore, exhibits much variation in vigor, density, aggressiveness, and ornamental desirability.

Rosa spinosissima var. altaica is recommended here because it is a more robust form. In late May or early June, it is freely loaded with large, lemon-white blossoms, followed by black hips during the autumn.

Another desirable form is Rosa spinosissima var. lutea which is also dense and vigorous, but in addition, bears primrose-yellow flowers and has beautiful dark green foliage. I am told by members of the New England Rose Society that this rose species responds to transplanting more rapidly if it is given water and provided with fertilizer during the first summer to help it become established. Once established, the Scotch rose can be expected to last indefinitely.
Securinega suffruticosa
asiatic securinega

Height: 3–6 feet
Spread: 3–6 feet
Environment: Full sun
Hardy to −10°F
Native to NE. Asia

This dense, bushy shrub bears thin, willowy branches, clad with bright green leaves. Flowers and fruit are relatively insignificant. Unlike most of the other shrubs, it does not appear to be stoloniferous, but rather it branches freely from the base. In order to keep it dense, it may need to be pruned to the ground every two to three seasons. This theory needs to be tested under field conditions. It is recommended here because of the vigor and attractive foliage it exhibits in our collection.
**Sorbaria sorbifolia**  
Ural false spirea

- **Height:** 5–10 feet  
- **Spread:** 6–10 feet  
- **Environment:** Full sun to light shade  
- **Hardy to:** -50°F.  
- **Native from:** N. Asia to Japan

Mention the name Ural false spirea and most people either do not know of it, or discount its use because of size. Unfortunately, people tend to see only its capacity to overwhelm a small garden. Instead, they might well look to its potential to solve difficult landscaping problems. For years, the *Sorbaria* species in the shrub collection at the Arboretum have presented a management problem. They were so prolific in their growth that they quickly outgrew their space and needed to be pruned back severely every year. As a result, they required annual maintenance and always appeared to be butchered rather than exhibiting their natural billowy shape. Here was a classic example of a good plant incorrectly sited. In reviewing the management of the shrubs at the Arboretum, we decided to tie together what was viewed as a problem shrub with a problem landscape maintenance area — the steep, grass covered slope adjacent to the State Biological Laboratory. Here, its unusually rampant growth can help reduce mowing, by covering as much of the bank as possible. These plants were transplanted during fall 1980 from the shrub collection, as divisions, from the existing mass. As of August 1981, the plants have recovered and while thin in density, appear to have suffered little loss of the individual divisions. The plants will flower even though they have been in their new location for less than one year.

*Sorbaria* forms large shrubs with attractive light green, pinnately compound foliage. Autumn color is pale yellow and unremarkable. They blossom in July or August with large terminal clusters of
creamy-white flowers, resembling large spirea sprays. The blossoms are most ornamental and delightful in their mid-summer presentation.

Attributes include ease of propagation, rapid reestablishment in new locations, freedom from pests, and aggressive colonization of poor soil types. They are amazingly salt tolerant. I've seen plants grow along the coast within sight of the ocean in both Maine and Rhode Island. They do appear to have a reduced size when grown in dry or extremely shaded locations.

Sorbaria forms a shrub which might benefit from periodic pruning or mowing to encourage young vigorous stems, increased density, and more full-bodied flower clusters.

The Sorbaria best known and most frequently grown is S. sorbifolia. However, I would recommend that people review the attributes of S. aitchisonii for the foliage of this plant possesses a darker green, more vibrant appearance and shines in the summer sun.

**Spiraea alata**

Japanese white spirea

Height: 1½–3 feet
Spread: 3–5 feet
Environment: Full sun to light shade
Hardy to –20°F.
Native to Japan

The Japanese white spirea forms a dense, low mass with large fleecy white flowers. Generally summer foliage is a dull green and not showy; however, a few leaves exhibit a purple-red tinge. The best long-term maintenance might be to cut the whole plant down occasionally in order to thicken the mass and keep it populated by young, robust growth.


*Spiraea × arguta*

‘Grefsteini’

Grefsteini garland spirea

Height: 3 feet
Spread: 3-5 feet
Environment: Full sun to light shade
Hardy to −15°F. (perhaps lower)
Hybrid origin

We received this *Spiraea* (AA 418-65) from the Old Farm Nurseries in Boskoop, Holland in 1965. I have never seen it listed elsewhere and wonder if it may not be synonymous with another cultivar. However, the plant as it exists for us can be described as follows.

At sixteen years of age, from a rooted layer, it is three feet tall and spreads by stolons three to five feet. It blooms at the same time as *Spiraea × arguta* ‘Compacta’ but is vastly superior in flowers, form, and density. It is a first rate plant, densely packed with thin wiry stems which are upright, forming almost a level top or surface. The general habit effect is informal. The leaves are narrow and lance shaped, pale green with a yellow-gray cast, and have a delicate appearance and fine texture. Flowers are abundant and pure white and both larger and fuller than *S. arguta* ‘Compacta’. This plant should make a delightful mass planting, low informal hedge, or specimen plant.

Old Farms Nursery describes it in the 1964–65 catalog as “New, pure white, exceptionally large flowers.” At the Arboretum, ‘Grefsteini’ is among the best of our *Spiraea* representatives.
**Viburnum rafinesquianum**
downy leaved arrowwood

- **Height**: 6–8 feet
- **Spread**: 5–10 feet
- **Environment**: Full sun to light shade
- **Hardy to**: −50°F
- **Native to**: eastern North America

Landscape architects who seek native plants to establish naturalistic settings should find this viburnum useful from a number of perspectives. It has an informal billowy habit; is more cold hardy than *Viburnum dilatatum* and *Viburnum dentatum*; it forms persistent colonies and is of the easiest culture.

Flat clusters of creamy white flowers appear in late May or early June and, while small in size, are abundant in number. They are followed by small clusters of blue-black fruit which ripens in the autumn. Autumn foliage is a dull bronze-purple. While this viburnum may not be as spectacular in fruit or autumn color as *Viburnum dilatatum*, it appears to have a greater longevity. Our finest plant (AA 17974) which grows in full sun, was grown from seed in 1880. As of July 1981, it is six to eight feet tall and spreads in a narrow band between driveway and sidewalk for a distance of thirty feet. On the sun side, the plant is dense and full to the soil line, but it is a bit thinner on the side lightly shaded by a tree. The upper foliage surface is uneven giving an informal contour to the surface of the mass. After 101 years, this mass planting remains robust in both growth and appearance.
Zenobia pulverulenta
zenobia

Height: 3–6 feet
Spread: 3–6 feet
Environment: Full sun to light shade
Hardy to −10°F.
Native from SE. Virginia to NE. South Carolina

Zenobia is a bit less robust than most of the foregoing plants. It is included here because in its native habitat it is a plant which inhabits low, swampy soils. As a landscape plant, it could be used in mass where the soil is acid and drainage is imperfect or impeded. It also thrives in drier sites with soil rich in organic matter.

At the Arboretum, there is a mass planting in the area of the juniper collection adjacent to the brook. These plants were acquired in 1930. One note in their history indicates that a grass fire burned them to the ground in 1965. Today, these plants are four feet tall, strongly stoloniferous, and while they exhibit some dead twigs, their general appearance is robust. Foliage is medium in texture and varies, from plant to plant, from light blue-green to medium green. The bluer leaved forms are most distinct in the landscape and more attractive in their visual quality. The zenobia plants blossom in June and bear large white bells clustered along the stem.

While the mass planting is dense, there are small plants of Sambucus canadensis invading the colony. From observation, it appears to be more suited to low wet sites and gentle banks, rather than steep slopes with impoverished soils. People who consider zenobia to be marginally hardy should keep in mind that during 1981, one of our plants celebrates 100 years at the Arnold Arboretum. However, for optimum landscape effect, it is a plant best used in more southern or milder locations. Zenobia pulverulenta is a native plant which certainly deserves greater landscape use.
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