The Gardener's Journal

Reynolda Gardens of Wake Forest University

Summer 2001

Lord and Burnham Greenhouses

by David Bare, *greenhouse manager*

I have not had the best of times in modern greenhouses. My experience has been they are too hot to function in the summer, and the drastic change in temperature in winter from sunrise to sunset, though great for some plants, can be a little misleading to others. In my case, this was compensated for by a fan, set to come on thermostatically, that would jerk on and, with a roar, suck air from a corresponding vent on the opposite wall, thus cooling the contents of the greenhouse for the seventy seconds it would take to reheat and start the whole process over. This works if you have no concern for catching pneumonia and losing your ability to hear anything below the decibel of say, a lawn mower, but it is not the most pleasant working/growing environment.

virginia weiler

So it was with great pleasure that I discovered the simplicity of the ventilation system when I started work at Reynolda. Pull chains operate the roof vents, which swing out on elbowed arms. Wheel-shaped cranks operate hip vents in the same fashion, and a chimney effect is created. Hot air rises, and, on its way up, pulls the cooler outside air from the hip vents into the greenhouse. Very simple and very efficient.

Granted, there are plenty of hot days in the greenhouse and a few chilly ones as well, but given that the greenhouse was built in 1913, a few leaks are to be expected. Even though we don't know many details

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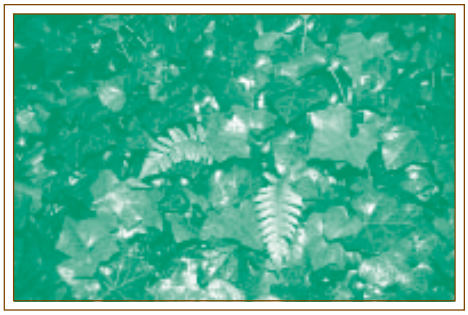
Native *and* Exotic Plants *in* Reynolda's Gardens *and* Landscape: A Legacy *and* a Challenge

by Camilla Wilcox, *curator of education*

Often even the most experienced gardeners mentally separate the garden from the rest of the plant world. Hybrid lilies and roses go in the garden; wildflowers belong in the woods and along roadsides. It is usually thought that rank-growing native plants simply do not belong in even the most casual plantings today. In the nineteenth and early twentieth century world, however, that line was not so clearly drawn. Then, respect for the native flora of the Southeast was such that a stunning variety of trees, shrubs, and herbaceous plants was utilized in gardens here and abroad. Over the succeeding years, admiration of native plants in the garden setting waned in American gardens. They were not quite showy enough for some tastes, suspected of causing allergic reactions, too subtle in color, bloomed too briefly, and some even spread a little too rapidly under improved garden conditions. By the time we restored the formal gardens at Reynolda, native plants were rarely included in most garden designers' plant palettes. One of the delights of growing this garden, however, has been the rediscovery of the beauty of natives within the formal garden setting. We have found that many of the



Native ferns amid English ivy

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Native and Exotic Plants

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native flowering plants Thomas Sears and Mrs. Reynolds chose for the garden are eager growers, but none are truly voracious in their need for room to grow, nor imperial in their drive to spread to the far corners of the world, unlike some of the exotic species that grow alongside them.

As we all know, it's not in the nature of most gardeners to cultivate the old and familiar when the new or exotic is so much bigger, showier, or more interesting. In 1917, as now, garden owners throughout the country were interested in exotic species and used them extensively in garden and landscape designs. Some of these had proved, over the previous fifty years, to be decorative, easy to grow, and functional for particular uses, such as covering arbors, creating dense hedges, or producing masses of flowers for cutting. Many of the original varieties of nonnative plants which were grown at Reynolda, such as the herbaceous plants delphinium, peony, hosta, and snow-in-summer; the shrubs tea rose, lilac, and mint shrub; and the trees crabapple, orchard apple, and Japanese cedar, seem to have lived out their lives here delighting passersby and providing food and nesting sites for animal life. Most of them eventually died without creating a widespread or lasting negative impact on the surrounding countryside. But others, lurking under the guise of useful ornamentals, were also included in designs for gardens and landscapes surrounding buildings and roads. Many would not be unmasked here and elsewhere until another fifty years had passed, and they were then discovered to have invaded large swaths of land. Among these nonnative invasive species were turquoise vine, English ivy, bush and vine honeysuckles, bittersweet, and silverberry. The shrub border beside the formal garden alone contained four species of nonnative bush honeysuckle; English ivy was planted at various places on the estate; Asian wisteria was planted on two tea-houses and in the Blue and Yellow Garden in the formal garden; and turquoise vine was planted on arbors and trellises in the gardens and village. These plants, and others, have escaped from ornamental plantings throughout the Southeast, and they now pose a serious threat to the places where they have gained a foothold, by choking out native plants, changing food resources for native and migrating animal species, and altering some ecosystems, seemingly irrevocably. Ironically, and sadly, this result was the antithesis of one of Mrs. Reynolds' goals for her property. She intended that Reynolda Farms would be a model for area landowners, demonstrating various means of restoring land previously devastated by poor farming practices. In some places on the estate, plantings were chosen specifically for their ability to rebuild soil health.

Japanese honeysuckle *Lonicera japonica* var. *repens*

How the Growth Habits of Invasive Exotics and Natives Differ

As a general rule, native plants are perfectly adapted to the environment in which they originated and in which they grow. Typically, they exist in harmony with the plants around them and provide food sources for certain species of animals. They take from their environment and give back to it in equal measure. They usually do not drain water tables or choke out their neighbors. If minor changes come to the environment surrounding them, they can sometimes adapt, even though they may no longer thrive. If the change is too drastic, they can move; that is, their dispersed seeds or vegetative parts can survive if they are distributed to more favorable locales. If conditions are not favorable, they die. By contrast, many of the ornamental plants that were introduced here over the last four centuries, especially from Asia and central and northern Europe, have super-adapted. The growing conditions here are often even better than they were at home, with a slightly warmer winter, a little more rainfall, better soil, more animals to spread the seeds, and yes—even more gardeners to carry them to places far from their homeland and disperse their seeds for them. They've taken the opportunity and run with it, to get bigger and better than those that evolved here over millennia or longer.

When these nonnative plants were introduced to American

horticulture, some outstanding feature or quality—an unusual growth habit, an ability to protect soil from erosion, a peculiar flower or leaf form—made them an instant hit with gardeners or farmers. We've heard the kudzu story many times and seen the devastating results of its introduction, but the change in the landscape that has occurred as a result of these lesser-known plants has been so gradual that many people don't realize how much damage they have done and will do. Seductive qualities of bloom and fragrance keep gardeners purchasing or sharing these plants; the food sources they provide in the remaining wild areas ensure that wildlife will continue to spread their seeds; and increased disruption of the natural landscape opens opportunities for nonnative plants to become established where growing conditions would not ordinarily be favorable for them.

Gardeners, scientists, government agencies, and conservationists are increasingly working together to restore ecosystems damaged by these and other nonnative plants. Governmental agencies working with scientific groups, like the Exotic Pest Plant Council, are trying now to develop safeguards against future invasions by preventing the entry of plants into this country that have been determined by scientists to have qualities that could cause harm such as that caused by similar plants in the past. This is a daunting task, because the demand for exotic plants is creating a rush to bring new plants to market, sometimes after only very brief testing in selected environments. As gardeners, it's very hard for us to refuse the exciting offers of plants newly discovered in Asia, or to refrain from planting showy vines that we know are invasive. But restraint today may very well make the difference in how the Southern landscape looks and functions in the future. We have the advantage now of being able to learn from past plant-lovers' enthusiasms and mistakes because we have witnessed the disastrous consequences of planting some types of exotics. At the same time, we can see the beauty of the native plants in the formal garden and, through them, begin to reestablish in our collective gardeners' mind a love and respect for the native flora, making room again for it in our hearts and in the Southern landscape that was its home, first.

JAPANESE WISTERIA *WISTERIA FLORIBUNDA*

A Tale *of* Two Natives: Virginia Creeper *and* Poison Ivy

Virginia creeper (*Parthenocissus quinquefolia*) and poison ivy (*Toxicodendron radicans*, formerly known as *Rhus radicans*) look very much alike, but they are not related. Even though they're both natives, even the purest native plant lovers among us usually draw the line at poison ivy in the home landscape. These two plants are very tricky. They often grow together, and they have similar growth habits. Both creep along the ground and clamber up tree trunks. Both are deciduous. Both grow in sun or shade.

Typically, each leaf of the Virginia creeper is made up of five radiating leaflets, but there are sometimes only three at the growing tip of the vine, bringing to mind the childhood ditty, "Leaves of three, let it be." Before assuming it is poison ivy and grabbing the protective clothing and herbicides, "just to be sure," take a closer look. Virginia creeper is a wonderful vine, suitable to all types of decorative purposes, and we don't want to destroy it unnecessarily. It was a featured ornamental vine throughout the plantings at Reynolda. It is especially beautiful in the fall, when the leaves turn a deep scarlet. It is rarely destructive, as it clings lightly to supports, produces a significant but not excessive number of dull, dark green leaves, and is easily controlled with a few snips of the pruner.

POISON IVY *TOXICODENDRON RADICANS*

Poison ivy leaves are medium green, smooth and shiny, turning lovely shades of orange to red in the fall. It, too, clings lightly in the beginning, but as it ages it forms a thick trunk with a hairy covering. A mature vine is often heavily laden with leaves. Often such a plant insinuates itself into a tree's branches, making it difficult to distinguish its leaves from the tree's—a word to the wise when the raking season comes along.

Oust the Enemy, Treasure the Friend—How to Tell One From Another

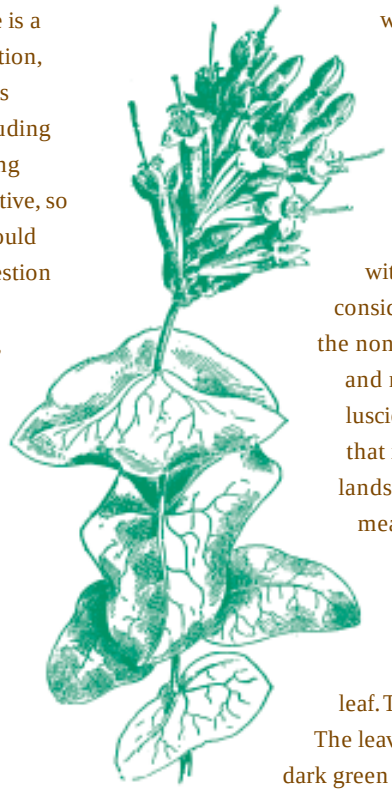
by Camilla Wilcox, *curator of education*

Plants that are actually heroic survivors of the onslaughts of current environmental conditions can easily be victims of mistaken identity. Many of them seem to be very similar to exotic plants of the same genus or family; others may have characteristics in common with other plants, making them an unintended target. In Florida, a large stand of native dahoon hollies was wiped out by mistake when inexperienced work crews confused it with the invasive pest, Brazilian pepper. The workers were instructed to kill plants with red berries. Since both plants had red berries, they destroyed them both. Although the Florida case is a dramatic example of the results of misidentification, such mistakes can easily happen to gardeners as well. Current aggressive removal methods, including applying specific herbicides and manually cutting plants at certain times of the year, are very effective, so anyone who is involved in plant eradication should make positive identification of the plants in question before undertaking the project.

The native bittersweet, honeysuckle, wisteria, and wild grape all grow here naturally. But how can you be sure enough to eradicate one and treasure another, when they seem so much alike? Numerous field guides and taxonomy texts are available to help, but they can be difficult to use because of the botanical terms they employ. Here are a few tips, in plain language, to help you quickly distinguish the native from the exotic. You'll still need to refer to the more scientific texts for complete information.

Bittersweet

Vines bearing colorful orange and yellow fruit are commonly cut in the fall for decorative arrangements,and plants are even sold at area farmers' markets. The tip of the pale green leaf of the Asian bittersweet (*Celastrus orbiculata*) is rounded, whereas the tip of the darker green leaf of the native (*C. scandens*) is pointed. Flowers bloom and fruit is formed at the tips of branches on the Asian, but along the stem on the native. Both are vigorous vines.



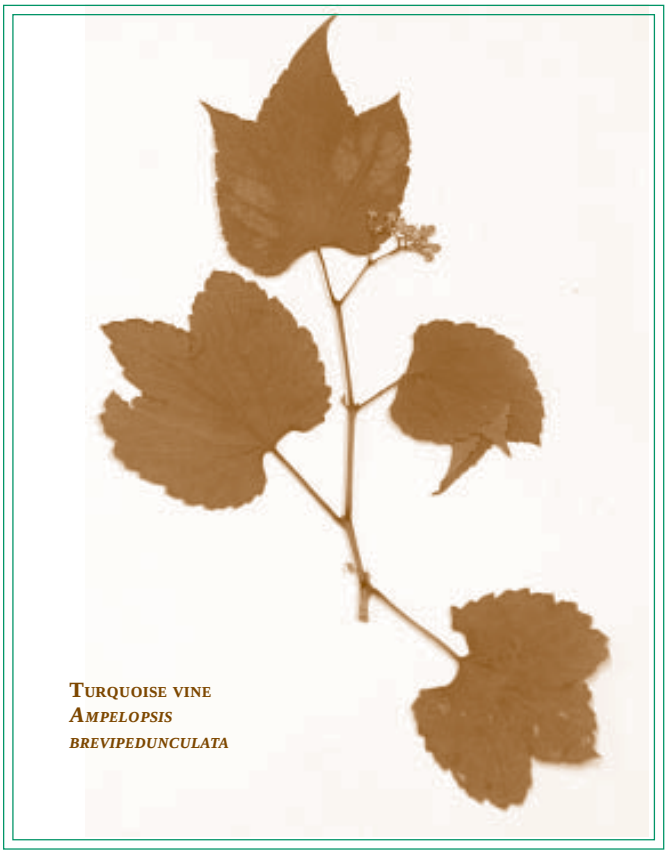
Coral Honeysuckle
Lonicera sempervirens

Wisteria

While it can be very difficult to distinguish the wisterias at a distance because they all climb so rambunctiously, a close look reveals the differences. Most of the wisteria we see is the Asian species, so we can make comparisons from it. There are two varieties of Asian wisteria, the Japanese (*W. floribunda*) and the Chinese (*W. sinensis*). Both grow to eighty feet or more. The seed pods are velvety, from about five to ten inches long. Flowers are intensely fragrant and held in loose clusters. The pod of the native wisteria is smooth, and it is smaller than the Asian's, only about two-thirds the size. One of the two native southeastern wisterias, *W. frutescens*, reaches only sixty feet. Its fragrance is much lighter than the Asian's, and the flowers are fewer in number. You don't have to just hope you can discover this one—you can buy it. There are two main cultivars, 'Nivea' and 'Magnifica'. The less common Kentucky wisteria (*W. macrostacys*) is smaller still, reaching heights of only fifty feet, but it is more floriferous. Each cluster holds up to ninety densely-packed rose-colored flowers. Both of the native wisterias grow naturally in wet areas, such as stream banks.

Honeysuckle

There are several striking differences between the coral honeysuckle vine (*Lonicera sempervirens*), which is native, and the Asian (*L. japonica*). First is the extraordinary size and vigor of the import, as compared with the more delicate native. Coral honeysuckle is considered to be a vigorous vine, but it can rarely compete with the non-native. The Asian plant, with the seductive, sweet scent and nectar that attract humans and other pollinators, and the luscious fruit that attracts birds and other wildlife, is the one that is literally smothering large areas of the Southern landscape. Because eradication can be accomplished by various means at different times of the year, it's helpful to be able to identify it at any time. When the leaves come out in early spring, look at the tips of the vine. In the native, the first one or two pairs of leaves are joined, producing a structure that looks like a rounded, double leaf. These terminal leaves are not joined in the Asian species. The leaves of the native are a bluish-green, in contrast with the dark green of the Asian. In late spring, the native's elongated bell-shaped flowers are a distinctive scarlet-orange to coral on the outside and yellow inside. We all recognize the Asian's flower, having spent long hours of our childhood loitering near playground vines, sipping its nectar drop by drop. Flowers are usually white, fading to yellow, then gold. One variety has a reddish tinge on the outside. When the native's fruits form they're bright red, while the Asian's are black. In winter you can just snap a woody stem. If it's hollow, it's Asian. There are several varieties of the native honeysuckle on the market. They're wonderful for trellises and will grow in sun or shade.



TURQUOISE VINE
AMPELOPSIS
BREVIPEDUNCULATA

Grape Family Members

One of the most seductive of the plant villains is the turquoise vine (*Ampelopsis brevipedunculata*), which belongs to the grape family. Its leaves are very similar in appearance to the more deeply cut leaves of some of the wild grapes. (There is also a native ampelopsis, but it is not commonly seen here.) It produces an intriguing, brightly-colored small fruit that ripens in stages across the blue end of the color spectrum. Birds flock to it and strip it as soon as the fruits ripen, carrying the seeds far and wide, where they seem to have an extraordinarily high germination rate, in addition to being highly adaptable to a range of conditions. It competes heartily with even the most determined natives and exotics. The most obvious difference between the native grape and the turquoise vine is, of course, the fruit. The turquoise vine tends to produce multitudes of fruits in loose clusters along numerous stems. The native grapes produce small to mid-size fruits that range in color from red to black. Depending on the variety and growing conditions, fruit production on wild grapes can be sparse; fruits are often produced singly. Vines are usually single and sturdy, often reaching great heights if they find suitable support.

Further information on invasive plants and recommendations for control is available from the National Park Service Alien Plant Working Group, http://www.nps.gov/plant/alien

Bush Honeysuckles—Invasive Beauties

"The honeysuckles belong to our most popular ornamental shrubs. They are of easy cultivation and propagation, most of them are quite hardy and the flowers, though rather small, are profusely produced, mostly of pleasing and delicate colors varying from white or yellow to pink, purple or scarlet, and followed by attractive red, yellow, white, blue or black fruits; the shrubs are never coarse or weedy, do not produce dead wood to any extent, do not need much pruning, and are long lived."—Cyclopedia of Horticulture, L. H. Bailey 1936

Flowering shrubs were in vogue when Reynolda's plantings were designed. Many of them required specialized pruning techniques to keep them at their best, but the bush honeysuckles needed almost no attention. With a variety of forms, leaf colors, and textures, bush honeysuckles served as a foil for shrubs with showier flowers and as a background for herbaceous plants. Widely planted in American gardens, locally they are still a familiar sight because they have persisted where they were planted in the yards of older neighborhoods around the city and because they have spread to waste areas and woodlands. At Reynolda, four species of bush honeysuckles were listed for the shrub border between the family home and the formal garden. Only one remains there, but over the years these four species, and several others originally planted elsewhere on the estate, have spread to other parts of the property as their fruits have been eaten by birds and their seeds dispersed. Because of their tendency to spread, three of them are described as invasive by the Alien Plant Working Group of the National Park Service.

L. MORROWII

L. X BELLA

L. MAACKII PODOCARPA

L. KOROLKOWII

L. morrowii, Morrow honeysuckle, was admired for its unique form. The multitude of gray branches forms a thick mound, with gray-green or blue-green leaves cascading to the ground.

L. x bella 'Albida' is also called belle honeysuckle. It is a cross between *L. tatarica*

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Growing Lavender in a Southern Garden

by Lisa Kinnamon, *horticulturist*

I did not grow up in a family that gardened. Our gardening was done by nature, and the clover and dandelions that I now call weeds, I used to call flowers. The flowers I remember most vividly were wild violets. I would peek out the front window every morning, hoping to see the bright purple flowers that said spring was on the way. It was the simple joy of these memories that led me to gardening.

When I did begin gardening, one of the first things I tried to grow was lavender. I bought seeds for 'Lavender Lady', basil, and salvia, planted them in separate containers and waited. The basil germinated, then the salvia, and … that was it. No lavender. I did not know then that, in order to germinate, lavender seeds need a cold, moist period that mimics the winter conditions where it grows naturally. I also did not know that, even if the seeds had germinated, my lavender would not appreciate the humidity and heavy soil conditions we have here in the Piedmont. I really didn't know much of anything about lavender, so I investigated.

Spanish lavender *L. stoechas*

To begin with, English lavender is really Mediterranean in origin, not English. Early Romans used lavender to scent their public baths and introduced the use of lavender as a cleansing agent to other cultures. The English popularized the use of lavender, so lavender is often associated with them. In England, lavender became synonymous with laundry day. The Old English word laundry is derived from the Latin *lavare* (to wash). The word lavender becomes launder when the letter v is changed to u. Washmaids were known as laundresses. The English also used lavender to treat headaches and ease tension, as well as in nosegays, which were made by tying the cut flowers together so they could be sniffed when needed. The love of the English for lavender is summed up on the wrapper of the well-known lavender soap from Yardley of London, saying that it "…has kept women in hot water for over 200 years—and they have loved every minute of it." Nowadays, lavender is used primarily in perfumes and bath products.

Although there are many differences in temperature and climate between the Mediterranean and England, they both have coastal climates with well-drained, alkaline soil. Neither has the combination of extreme heat, humidity, and heavy, acidic soil that we have here. It is no wonder that I had such a hard time growing lavender. Through experience and the advice of other lavender lovers, I have learned that the best way to get a lavender plant is to buy one or take cuttings in late summer. This is the way to go if you want to try growing lavender—and you will get exactly the lavender you want, since cultivars do not come true from collected seed; in other words, the offspring may not resemble the parent.

There are a few cultivars that seem to do rather well in our climate. The most highly recommended are: *Lavandula x intermedias* 'Provence' and 'Twickel Purple', the long-stemmed spike lavenders used in the perfume industry; *L. angustifolia* 'Munstead', an "English lavender," which is the sweetest of lavenders and often used for aromatherapy and in high-quality perfumes; *L. stoechas*, Spanish lavender; and *L. multifida*, fern-leaf lavender.

Both the English and spike lavenders are hardy in North Carolina winters. The Spanish lavender is marginally hardy; of the three planted in the herb garden here at Reynolda Gardens, only one survived and apparently thrived this past winter. It is a huge, beautiful, sprawling lavender that began blooming in April. It has unique bracts, shaped like bunny ears, at the tip of rounded flower heads, that beg to be squished. It is difficult to believe it is considered a weed in parts of Australia. The fern-leaf lavender is an annual here, and the name describes it well. The lacy foliage is lovely in hanging baskets or pots. Unlike the other lavenders, fern-leaf will benefit from regular watering and light fertilization. There are many other types of lavender that can be grown here in the Piedmont if treated as annuals.

Here are some tips for growing your lavender. Make sure you have a sunny site. A south slope or a rocky area is perfect. If you do not have either of these, try planting in a terra cotta container filled with a quality potting soil; or you can try changing growing conditions in the ground by mixing some pea gravel or Permatill (exploded slate) into your soil to improve drainage, along with some lime to raise the pH. Mixing sand in your clay soil does not work very well, as you need to add a disproportionately large amount of sand to clay before you have any effect on drainage. Adding just a little sand creates gritty clay, perfect for making bricks but not suitable for planting.

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Delphinium: The Mysterious Stranger in the Southern Garden

by Diane Wise, *head horticulturist*

Ah, the lowly delphinium. Lowly, perhaps, but for such a humble plant, it certainly does inspire a lot of interest. Without a doubt, the plant I am most often asked by the public to identify and talk about is the delphinium. During May and June, rarely a day goes by that I am not approached with a series of delphinium, or "D," questions, which usually begin with "What is that flower?" Why? Weeellll… The easiest answer would be that most of our visitors don't garden and so are unable to recognize the delphinium; consequently, they know nothing about it. But, since probably over half of our visitors do garden to some degree (and the easiest answer is rarely the right answer, according to my Grammy), that just isn't the case here. Or is it? Actually, this is a trick question, and I'll explain in a minute. But first a little bit about delphiniums in general.

***Delphinium x belladonna* 'Casablanca'**

The delphinium, or larkspur, as it is more commonly called, is a group of about 250 species of annual, biennial, or perennial herbaceous plants with fibrous or fleshy roots. It belongs to the Ranunculaceae family, which also includes the buttercups. The word delphinium comes from the Greek *delphis* (dolphin) because, before opening, the bloom is thought to resemble the ocean mammal. Delphiniums prefer full sun in a moist, well-drained, slightly alkaline soil with protection from wind and heavy rains. Plants range in height from one and one-half to six feet tall. Flowers can vary from white to pink to yellow to purple and are borne on spikes that make excellent cut flowers. Propagation is by seed, division, or basal cuttings in the spring.

But I want to talk about Reynolda's delphiniums. The one we grow at the Gardens is a (pay careful attention here) "supposed perennial" hybrid known as *Delphinium x belladonna*. It resulted from crosses between the species delphinium *elatum* (*D. elatum*) and species delphinium *grandiflorum* (*D. grandiflorum*). *D. x belladonna* forms a small clump of foliage with erect, branching flower spikes that are two and one-half to three feet tall. The pale to mid-green leaves are large and divided into five to seven parts near the base of the plant; the upper leaves are divided into three parts. From *D. x belladonna*, we grow three cultivars that differ only in bloom color. The first, 'Casablanca', is a bright, pure white. It is planted along the main allée in the lower garden. The second, 'Belladonna', is also planted along the main allée. It is a pale blue—not just a pale blue, but "Carolina blue" (with apologies, Wake Forest) that is rarely seen in the plant world. The last cultivar that we grow is 'Bellamosum', which is planted in the Blue and Yellow Garden. It is most often described as deep blue, but folks, that is an understatement. This blue is so vivid as to look artificial and actually figures into one of the "D" questions most often asked, "What is that incredibly blue flower over there?" During May and June, our plants bear flower spikes that each last two to three weeks and are particularly attractive to bees and butterflies.

Okay, here is the trick question part. Remember when I asked why delphiniums generate so many questions if the majority of our visitors garden? Well, having gardening experience doesn't necessarily mean that one would know a delphinium if one sees one. The fact is that this type of delphinium is rarely cultivated in the South and, as such, is seldom recognized by Southern gardeners who may have only seen photographs of them. With the heat and humidity present from late June through September, *D. x belladonna* just doesn't survive long here. (Remember those words "supposed perennial?" Aren't you glad you paid attention?) So, how do we grow them? As annuals, because we fully expect to replace about eighty percent of them each year.

Now, that should answer most of the "D" questions. Except one, which is "Why?" Even with all of that, just why do we grow delphiniums at Reynolda Gardens? Oh, that's simple. Because they are on the original 1917 plan drawn by landscape architect Thomas Sears, and he told us to. And we're willing to work so hard to get them to grow, because in my opinion, no traditional perennial border would be complete or beautiful without its share of delphiniums.

Greenhouses

Continued from page 1

about the early history of the greenhouse and conservatory, we do have copies of correspondence to the manufacturer, Lord and Burnham, from Mrs. Reynolds, in which she specified that she wished to build the foundations from native field stone, with the firm supplying the plans and furnishing the"frames, glass, ventilating apparatus, beds, furnace and all latest equipment and accessories."

This letter, which was dated May 27th, 1912, is a request to reconfigure or recreate an earlier plan drawn up by Lord and Burnham. The letter reads,"I would like to plan for the following: medium-sized compartments for American Beauty roses, (other) roses and carnations. A palm room, a good-sized grapery, a tomato section, a large vegetable section and an assorted plant section. A propagating room and a section for fruits. A nice work room, a pit and about 200 feet of cold frames."

Lord and Burnham was the firm to call on with horticultural aspirations of this caliber. Frederick A. Lord started building greenhouses professionally in Syracuse, New York, in 1856 under the name Lord's Horticultural Manufacturing Company. By 1870, success had led him to Irvington, New York, a location chosen to service the wealthy estate owners whose properties bordered the Hudson River. In 1872 Lord was joined by his son-in-law, William Burnham. During the 1870's Lord's was contracted to build"two large beautiful conservatories, modeled after those in Kew Gardens, London"for wealthy California businessman, James Lick. The structures were manufactured in New York and sent by clipper ship to Lick's estate property in San Jose. A few months later Lick died, before the buildings could be constructed.

Advertisement in Country Life magazine, 1903

The parts of the conservatories were eventually purchased by a group of twenty-eight prominent citizens, and the conservatory at Golden Gate Park was born. Lord's was paid $2,050 to send workers to San Francisco to erect the larger of the two conservatories on the site. (The smaller conservatory went to private use by the Crocker family in Sacramento. It was destroyed in 1955.) The conservatory at Golden Gate Park opened in 1879, and the reputation of Lord's was sealed. Twelve years later, the boiler exploded, and the central section of the conservatory was destroyed. All of the plants were lost. A donation of $10,000 from Charles Crocker, a name synonymous with the construction of the Central Pacific Railroad, permitted the building to be rebuilt.

The firm went on to build conservatories of note all over the country, among them the Phipps in Pittsburgh, the Enid A. Haupt Conservatory at the New York Botanical Garden, the conservatory at Biltmore House in Asheville, and the U.S. Botanic Garden Conservatory in Washington, which is currently under massive reconstruction. In 1881 the company erected the first curvilinear, steel-framed greenhouses in the country for railroad magnate, Jay Gould.

It was only natural that the firm's experience in greenhouse production would lead them into the heating field. They began by building cast-iron sectional boilers in 1873. This boiler proved to be a better product than what was currently available, but repairs were difficult, and the connections between sections were poor. In the 1880's, they introduced the Standard, a one-piece, cast-iron boiler that was to be manufactured for the next twenty years and sold to florists and private greenhouses. A sectional boiler based on the design of the Standard was introduced soon afterwards to compensate for the difficulty of shipping and installing the one-piece boiler. Shortly before Frederick Lord died in 1890, Lord's Horticultural Manufacturing Company changed its name to Lord and Burnham Company, and Burnham became president.

Through mergers and acquisitions, the boiler manufacturing arm of Lord and Burnham grew at a steady pace, and in 1919 the Burnham Boiler Company took over the manufacturing of the boiler division of Lord and Burnham. During World War II, the company converted their facilities to aid in the war effort, producing materials for landing craft, floating bridge equipment, and hand grenades.

Burnham Boilers and Lord and Burnham greenhouses are still available today. In an age when food production and distribution has become completely decentralized, when most seed for home gardens in the U.S. is produced in Costa Rica, and we sit down at any given time of the year to strawberries from Guatemala, oranges from South America, and tomatoes from California, graperies and tomato production seem downright alien to us. But in 1913, the food was worth more than the energy to produce it, and Reynolda was a working estate. Even with all the holes in the landscape history of this site, it is not hard to imagine the integral role the greenhouse must have played in producing the plants that were the fabric from which the gardens were woven.

Out *of the* Wild *and* Into *the* Garden: Native Perennials Jump the Fence

by Preston Stockton, *director*

It has always been interesting to me how gardeners tend to plant in categories—herbs in the herb garden; vegetables in the vegetable garden; native plants in the wildflower garden; perennials in the perennial garden. I wonder why. Plants certainly don't grow this way in nature. One thing I admire about Thomas Sears, the landscape architect who designed the gardens at Reynolda, is the fact that he incorporated trees, shrubs, perennials, and bulbs in the flower beds. He not only used the newest cultivars available at the time, but he also used a wonderful variety of plants native to North America.
North Carolina is blessed to have an incredible diversity of native plants. Many are perfect for our gardens and landscapes. One must keep in mind, however, that just because a plant is native to North Carolina doesn't mean it will necessarily grow in all of our gardens. Although it may hold its own under diverse conditions, it is best to grow it under its natural growing conditions for optimal performance.

Phlox divaricata

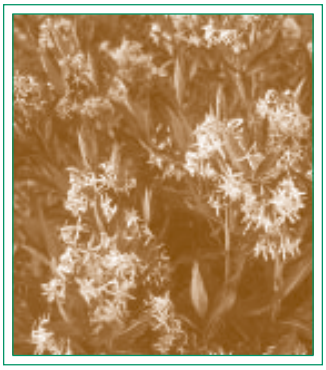
We grow many perennials at Reynolda that are native to North America. The following are a few I especially like that are also native to North Carolina.

- The woodland phlox, ***Phlox divaricata***, is a low, spreading, semi-evergreen plant that blooms in early spring with fragrant, blue flowers that attract butterflies. It is best grown in partial shade in moist, slightly acidic, well-drained soil. It is a good edging plant, growing only one to one and one-half feet tall. Shear after blooming to keep a neat appearance and induce more branching.

Thermopsis villosa

- Carolina lupin, ***Thermopsis villosa***, blooms in April, about the same time as the woodland phlox, with beautiful spikes of yellow, pea-like flowers. It grows three to four feet tall, with a spread of two to three feet. Carolina lupin likes full sun to partial shade and a slightly acid, well-drained soil. It's very drought-resistant once it is established.

- ***Amsonia tabernaemontana***, also called blue star or willow leaf amsonia, is very hardy and easy to grow. It blooms in April or early May, about the same time as the woodland phlox, with dense clusters of steel-blue, star-shaped flowers. Growing one to three feet tall with a comparable spread, this variety of amsonia grows best in full sun to light shade in a fertile, well-drained but moist soil. Although it will grow in a dry situation, it will not perform nearly so well. Long, thin seed pods will appear after blooming and should be removed to keep the plant neat-looking and to keep it from seeding off.



Amsonia tabernaemontana

- The smooth aster, ***Aster laevis*** (syn. *Symphyotrichum laeve*), is a great plant for the fall. It blooms from early August through September. The daisy-like flowers are light blue, with yellow disks in the center. The smooth aster prefers full sun to light shade and medium to dry soil. It grows two to four feet in height and needs to be staked.

- Most North Carolina gardeners are familiar with the hybrid columbines, but many do not know what a great plant our native columbine is. ***Aquilegia canadensis*** blooms in April and May with red and yellow flowers. The leaves are blue-green, and it grows two to three feet tall with a width of one and one-half to two feet. It grows in full sun to medium shade and must have well-drained soil. It is attractive to hummingbirds and butterflies and naturalizes very easily. It you do not want seedlings, remove seed pods after blooming.

A Brief History of Garden Vegetables

by John Kiger, *assistant director*

As we gardeners plan a garden each year, we often set out to find new and interesting vegetables to grow, only to settle for the same thing year after year because that's what is readily available to us. At Reynolda, we plant over an acre of the formal garden in plants that fit into the categories designer Thomas Sears called "Fruit, Cut Flower, and Nicer Vegetables." Because this is an educational garden, we try to incorporate as many varieties into the garden as possible. This year, as I started my cabbage, eggplant, onion, and other vegetable seeds, I found myself wondering where these plants originated. What is their history? I began digging a little on the internet and found an interesting site that told a little of the history of certain vegetables. After doing this research, I found that I appreciate the varieties more now, even though we're still growing much the same as everyone else.

Cabbage

Let me begin with cabbage. Wild cabbage is native to coastal England, Wales, the Mediterranean, and the Adriatic. It is from wild cabbage plants, which resemble collards, that we have cabbage as we know it today. Kale, kohlrabi, cauliflower, broccoli, collards, and Brussels sprouts were all developed from wild cabbage plants by farmers who recognized and encouraged various growth habits. Brussels sprouts, for example, were cabbage buds that were altered to form little cabbages on stalks. Cabbage seeds were brought to North America by early settlers. Cabbages were grown in colonies established by the Dutch along the Hudson River as early as 1621. Today, Wisconsin provides more cabbage than any other state for processing into sauerkraut, with Florida leading in the production of fresh market cabbage. Total annual consumption of cabbage in the U.S. today is estimated at nine pounds per person.

THE VEGETABLE GARDEN IN LATE SPRING

Beet

Beets are a common spring and fall crop that is high in sugar. They are thought to be a Mediterranean plant, quite possibly from Italy, although some historians believe this vegetable came from "wild plant stock with a far broader reach." People in Greece and Babylonia grew beets thousands of years ago for consumption and for the dye that can be produced from them. Today, beets are used as both a food source and a commercial dye. The dye gives processed foods a natural pink color. Ukrainians use it to dye their famous Easter eggs. Beets are grown abundantly in the U. S., but the leading producers of beets are France, the Ukraine, and Germany.

Cucumber

Cucumbers date back 9,000 years and originated between Myanmar and Thailand. Seeds from cucumbers made their way to Hispaniola via Columbus in 1494. By 1539, Native Americans were growing cucumbers in the southeastern part of North America. Annual consumption in the U.S. today is approximately ten pounds of cucumbers per person; four pounds of those consumed are in the form of pickles.

Eggplant

Eggplant was first cultivated in India 4,000 years ago. Beyond that fact, a great deal of history could not be found; however, it is known that Thomas Jefferson acquired eggplant seeds while visiting in France and grew them in his garden at Monticello in Virginia. Numerous cultures incorporate the eggplant into their cuisine, using it for many different recipes such as eggplant parmigiana and ratatouille, a vegetable stew.

Onion

Historians have found it difficult to pinpoint the origin of onions. They think they may have originated in either Central Asia, the Mediterranean, or, quite possibly, North America. Writings referring to onions have been found that date back to 3,000 B.C., and it is known that Egyptians ate them and also used them to replace eyeballs in mummy skulls.

Potato

I saved the best for last, or at least it seemed to be the most interesting to me. The common potato has roots all over the world. Its story began when it was "carried from its high-altitude Andean home" during the mid-sixteenth century. Since its introduction, the potato has been seen as a salvation crop. The Swiss cultivated it in high mountain regions where nothing else would grow, thus bringing settlement to the area. In Northern Europe, it was cited with easing malnutrition of mothers and reducing the infant mortality rate. The potato, along with the sweet potato, prevented famines in China when rice crops failed. The potato blight that struck Ireland around 1845 devastated the country. Approximately one million people died, due to starvation and "attendant diseases. " The blight had such a ruinous effect on the crop because everyone planted the same variety. This same fungus-based blight is still prevalent today; however, its effect is diminished due to the assortment of varieties that are being planted now. The potato has indeed come a long way. Recently, the space shuttle Columbia carried the 'Norland' variety into space, making it the "first plant chosen to try out life in zero gravity." Scientists, along with engineers from the University of Wisconsin, teamed with NASA on Project Astroculture. The team developed a special growth chamber with stainless steel water lines that supplied water and nutrients to the tubers. Artificial light was also supplied to aid in photosynthesis. The project was monitored for two weeks to determine the starch development in low gravity conditions. The goals of the experiment were to supply astronauts with food and oxygen and to clean the air. At this writing, results of the test were not available.

More information on these and other vegetables is available at http://www.foodmuseum.com.

KOHLRABI

POTATO

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Lavender

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Ellen Reynolds of Beagle Ridge Herb Farm plants her lavender en masse in a crushed-gravel bed. The gravel prevents soil splashing and keeps the foliage dry and clean. It also radiates heat upward, and as it slowly breaks down, it releases nutrients that lavender needs. If you use this method, all you have to do is watch and enjoy, since lavender thrives on neglect. You could also use this technique for many other Mediterranean herbs such as oregano, thyme, rosemary, and sage. They all appreciate good drainage and neglect.

So enjoy your lavender anywhere and everywhere—in the garden, its airy spikes cooling a late summer afternoon; or in the house, its soothing fragrance scenting your linens. Regardless of how you may use your lavender, I like mine best in the garden, where it can do its own thing, just like all of those weeds that I used to call flowers. All I need to do is watch, wait, and wonder while nature takes its course.

Bush Honeysuckles

Continued from page 5

(Tartarian honeysuckle) and *L. morrowii*. Its foliage is bluish-green.

L. maackii podocarpa is a variety of the Amur honeysuckle. It is a very large shrub with very long branches. The white flowers appear in June, and the berries often persist through the following winter. It is shade-tolerant and adapted to the understory of woodlands.

L. korolkowii is the blueleaf honeysuckle. As the name implies, its leaf color is a distinctive blue. It is much more open in form than the previous two, with smaller leaves. The flowers are rose-colored. This plant is not listed among the invasive species by the Alien Plant Working Group.

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