Dan Ladd’s approach to making art is unique, inserting himself into plants’ natural growth processes. Although the artist is inspired by how plants adapt and grow in nature, he harnesses that growth and guides the plants into becoming something that would not exist without his intervention. The results of these “collaborations with nature” are both surprising and beautiful.

Unlike bonsai, which stunts plant growth, or topiary, where leaves and stems are pruned away, Dan Ladd’s processes rely on the vigor of plant growth: fruit or roots filling a mold and stems growing together to form a graft union. This requires patience and time, from months to years. It is definitely not an art form for those desiring immediate gratification. In addition, not every project turns out as planned, so even after a full season of growth, a gourd may not have grown as expected or it may get damaged when removed from the mold. Until that moment when Dan takes it out of the mold, he doesn’t know how well it worked.

It has taken Dan Ladd years of trial and error to perfect the techniques so that he gets the desired results. We are delighted to be benefiting from that expertise. This exhibit takes horticulture—the science and art of cultivating plants—to a new level. We think you will be amazed at what Dan Ladd has created. Shaping Plants: Fruits, Shoots, and Roots; Collaborations with Nature by Dan Ladd will be on view at the Church Exhibition Gallery in the Lyman Plant House through February 24, 2012.
From the Director: 
**Early Snow Crushes the Landscape**

Michael Marcotrigiano

After a lightning bolt destroyed our great cedar of Lebanon (see the Fall 2010 newsletter, p. 8), I thought we had seen the end of natural disasters. I never thought the electricity would be followed by a gigantic tornado that just missed our immediate area (see p. 13), the rumbles of the Virginia earthquake, and Tropical Storm Irene. We survived those fairly well, but this newsletter comes late to you because just as we were getting ready to go to press we had a heavy October snowstorm paralyze the region. In addition, Madelaine Zadik, who is normally responsible for the newsletter, had an accident and is on medical leave (see below).

The winter storm came October 29, when fall was not over and many trees still had leaves. The crushing snow snapped limbs in record numbers. We are assessing the damage now. It is extensive. Approximately 300 trees were affected (see photographs on p. 10). Our first mission was to remove hazards to humans and to buildings, and to clear roadways. In conjunction with Facilities Management, a team of arborists, garden staff, and work-study students is working steadily. We will not be able to assess the health of individual trees until much later in the process. I can tell you, however, that the giant dawn redwood, *Metasequoia glyptostroboides*, on Burton Lawn lost many limbs, and for the first time in its approximately 125-year-old life the giant ginkgo near the Lyman Plant House lost a large limb. Both will survive but they are injured and less shapely. Many smaller trees were greatly affected as they bent as far as they could under the weight of over a foot of extremely heavy snow and then snapped. Other trees split enough to make them a concern for the future and they will need to be removed.

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Our website’s Landscape News link will give you more details and numerous images. This is by far the worst snow-related tree damage I have ever seen. Needless to say there will be an unusual number of memorial and honoral tree planting opportunities for those who want to be a part of the complete restoration of the landscape.

Our staff is not immune to limb breaks either. Our dedicated Manager of Education and Outreach Madelaine Zadik, who normally compiles the newsletter, was set to take a well-deserved vacation. While preparing for her trip, she had a serious accident and broke her leg. Please send good wishes to her. With the assistance of the college I was able to add Connie Parks to our staff until Madelaine returns. Connie, Smith class of 1983, is a long-term volunteer and editorial assistant for the newsletter. She put together this edition and will soon begin to develop interpretational materials for our yet to be completed plant evolution mural. I am currently on academic sabbatical leave (I’m not teaching but I am still directing our living museum, otherwise known as the Botanic Garden) and at some point I will write a newsletter report on my research, which involves interviewing those who breed trees for urban landscapes.

Our landscape is injured but in time will recover. We must all have patience. We will develop a replanting plan and nurture injured trees. In the meantime, we thank all of you for your support and hope that your favorite tree on campus was unaffected.
For thousands of years people have striven, and continue to strive, to make sense of the living world by classifying organisms, such as plants, in ways that help us understand how they are related to each other. But just as plants evolve over time, our understanding of the relationships among plants evolves as well. The first attempt at taxonomy, that is, organizing plants into logical categories, occurred around 400 B.C.E., when Theophrastus, a student of Aristotle, grouped plants together based on similarities in morphology, the external form and features of plants. Theophrastus first grouped plants by whether they were trees, shrubs, or herbs, and then further categorized them by other characters and by perennation (ability to live over one season to another). He published his classification system in Historia Plantarum, a work largely forgotten until the European Renaissance when it inspired several botanists to devise their own classification systems also based on morphological similarities among plants. Theophrastus was also the first scientist to have a garden devoted to science and education, which became the model for the first systematics gardens. Systematics gardens are gardens in which plants are arranged in ways that reflect their taxonomic relationships.

After several botanists proposed more classification systems based on morphology, Carolus Linnaeus decided to try something different. In the 1730s, Linnaeus grouped plants based on similarities in numerical characters, such as the number of stamens in a plant’s flower. Several other numerical classification systems emerged in the following decades. In the late 18th century, scientists stopped grouping plants based on numerical characters and began instead to group them based on the presence of similar organs and organ systems. This was due to the progress in studies of plant physiology, made possible by the more widespread use of the microscope.

In the 1860s, shortly after these shifts in plant systematics, Charles Darwin’s famous book On the Origin of Species created yet another shift. Instead of focusing only on similarities in morphology, numerical characters, and physiology, scientists began to infer similar ancestry of and evolutionary relationships among plants based on such information. They created phylogenies, which are diagrams resembling family trees that depict evolutionary relationships among plants. Adolf Engler, with Karl Prantl, created one of the first of the phylogenetic classification systems, assuming that simpler flowers were more primitive than complex flowers. The American botanist Charles Bessey, however, believed that the most primitive angiosperms, or flowering plants, had complex flowers, and thus devised his own system in 1915. Two botanists, Arthur Cronquist and Armen Takhtajan, expanded on Bessey’s ideas in the 1980s and created their own, similar classification systems. Cronquist’s system is generally more streamlined than Takhtajan’s, recognizing fewer plant families.

At the Smith College Botanic Garden, the Systematics Garden, which has existed for 116 years, has always represented a classification system based on phylogeny. Originally landscaped as a wooded parkland according to the design of Olmsted, Olmsted and Eliot, the garden was redone in 1895 to become a systematics garden, reflecting Engler and Prantl’s plant classification system. It remained that way until it was rearranged in the 1980s to reflect Cronquist’s and Takhtajan’s systems. Today it still reflects Cronquist’s and Takhtajan’s classification systems, with 44 plant families arranged in 34 beds.

Plant systematics has since, however, evolved considerably. Prior to the mid 20th century, plant classification systems were subjective, largely based on the opinions of the botanical experts who devised the systems. In the mid 20th century, a shift occurred in systematics as scientists began to make classification systems more objective and less reliant on professional opinion. This made plant identification and classification more accessible, designed so that anyone could have devised the same system given the data. Willi Hennig, who developed the concept of shared derived traits, and Rolf Dahlgren, who articulated that the goal of classification systems is to capture evolutionary relationships at certain points in time, pioneered this shift in systematics.

Even more objective was the use of DNA and molecular data in the 1990s to create phylogenies. Scientists do this by aligning certain sequences of DNA, such as chloroplast genes, from different plant species and determining the proportion of DNA base pairs that they share. It is assumed that the higher the proportion of base pairs the plant sequences have in common, the fewer mutations have occurred between them, so the more closely related the plants are to one another. Phylogenies are now created with computer programs that use alignment data and
statistics to create the most likely phylogeny. Scientists are then able to use the phylogenies to create classification systems based primarily on genetic information from the plants. In 1998, a group of scientists called the Angiosperm Phylogeny Group (APG) devised the first classification system based mostly on molecular data. As more DNA sequences and proteins were compared, the APG has since revised their classification system twice to reflect new information, once in 2003 and most recently in 2009, with the establishment of the APG III system. Research continues to be conducted on plant phylogenies to reveal more about the relationships among plant groups.

As plant classification systems evolve, systemsatics gardens around the world are beginning to evolve as well. Several botanical gardens in Europe and the United States have revised their systemsatics gardens to reflect the more objective APG classification systems. They have gone about this daunting task in different ways. Several gardens in Europe have chosen to cluster major groups of plants together in different shapes. The Royal Botanic Gardens, Kew, in London recently updated their Order Beds, in which each rectangular bed comprises plants of a specific plant order, to reflect the orders as dictated by the APG III system. Hortus Botanicus in Amsterdam, the first garden in the Netherlands to reflect the APG system, also clustered major plant groups, but it represents the groups as wedges in a semicircle rather than as rectangles.

Other botanical gardens have chosen to have their garden resemble a phylogenetic tree. The University of Wisconsin recently completed a systemsatics garden in which visitors can walk the spiraling path so that they visit more primitive plant groups first and then pass by more recently evolved groups. The University of Bristol in Wales also designed a systemsatics garden to reflect the phylogenetic tree, enabling visitors to walk along paths as if they were walking on the phylogenetic tree. The Botanic Garden at Leiden laid out its garden to reflect the phylogenetic tree as well, but chose to represent it as a series of rectangular beds arranged in a way that corresponds with the phylogenetic tree.

With the upcoming dredging of Lyman Pond adjacent to the Conservatory, the Smith College Botanic Garden plans to revise the Systemsatics Garden in the coming years. Although the design has not yet been confirmed, the revised Systemsatics Garden will reflect plant relationships as dictated by the APG III classification system. When selecting the plants to be incorporated into the garden, aesthetic considerations, such as flowering time and flower size, must be weighed in addition to scientific and educational value. The end result will be a garden that reflects our current knowledge of plant relationships, and a phase in the life of a garden that has evolved and continues to evolve as the knowledge it conveys evolves with the progress of science.

**Victories in Invasive Species Removal**

M ajor steps were taken this summer to eradicate invasive plant species from the Smith campus. The New England Wild Flower Society (NEWFS) and Botanic Garden summer interns worked together under the leadership of Jay Girard, the new Botanic Garden landscape manager, to further the college’s long-term commitment to invasive species removal (see Spring 2010 issue, p. 11). Hand pulling was used in conjunction with isolated herbicide application and GIS mapping to battle the invasive species surrounding Paradise Pond. The chief exotic offenders were oriental bittersweet, Celastrus orbiculatus; porcelain-berry, Amelopsis brevipedunculata; multiflora rose, Rosa multiflora; and Japanese barberry, Berberis thunbergii.

I headed a large removal project on the southern slope below the President’s Residence. With other Botanic Garden interns, I worked diligently to remove invasives that had completely taken over the region. Hours of vine pulling revealed trees and shrubs that had not seen the light of day in years. Over 250 individual plants were recorded on Smith’s GIS database in order to keep efficient track of the eradication process. Now that the site is cleared there is an exciting opportunity to redesign the landscape of this scenic waterfront.

The southern slope was not the only triumph. A few yards down the trail a concentrated effort occurred at the Japanese Garden for Reflection and Contemplation, which was constructed in 1986. Clearing away of groundcover from the rock formations symbolizing seven events in the life of Buddha was begun, along with cataloging and removal of Norway maple seedlings. A bit farther along the trail fellow intern Brittany Innis ‘13 worked in conjunction with NEWFS to complete the final phase of removal of invasives along the pond’s bank (see the Fall 2010 newsletter, p. 10). In addition to the invasive species already listed, Brittany’s team also worked to eradicate Japanese knotweed, Fallopia japonica (formerly called Polygonum cuspidatum). Not only do the removals benefit the ecosystems on campus, they also lessen the spread of invasive species in habitats downstream.
Unlike to get the instant gratification of annuals and container grown perennials, gardeners under glass have to learn patience. At the Lyman Conservatory we often start plants as seed received from other gardens or as small cuttings or divisions. Our time frame for dividends, flowers, is that of the proverbial long-term investor, and can take years or even decades. We have to be patient, let the plants mature into an adult phase, and hope the blooms are worth the wait.

A number of notable blooms occurred recently, each very different from one another and each a fine addition to our collections.

The Brazil nut family, the Lecythidaceae, is one that we have few representatives of, as it is, in the main, a family of huge tropical trees. Brazil nuts and a few exotic timbers are the only economic products traded internationally, but the family also has ornamental merit (if you can climb!), as many of the flowers are large and stunning, with a palette of red, pink, white, and yellow. These can often look mimosa-like as they feature a large boss of stamens. Fruits are usually large and have a woody inner layer and a lid, which allows dispersal of the seed. We acquired seed of *Barringtonia acutangula ssp. spicata* (Smith BG# 10698) via the index seminum of the Bogor Botanic Garden of Indonesia in May of 1997, and by August we had two seedlings starting their captivity. It is a small tree from seasonally inundated areas, freshwater swamps, or perennial watercourses. This ecological niche lends it one of its common names, freshwater mangrove, and its range is listed as Afghanistan to New Guinea. After we germinated the seed, the plant became a resident of the Palm House, our collection of species from the lowland tropics of the world. For 14 years we dutifully watered, pruned, and fertilized the plant as it passed from juvenile phase to adult phase and finally flowering. A single long, pendant chain began to form and a sequential opening of flowers followed. These were 2½ inch starbursts of wiry white stamens with a pink center, delicate tropical denizens with a hint of vanilla in their scent. Despite our hand-pollinating, no fertilization took place, as this species may need to be cross-pollinated.

As with stocks, so with blossoms: “Past performance is no guarantee of future results.” We can sometimes be at fault for lack of bloom in that we pull the plug on an investment too soon. This was nearly the case with *Heliconia vellerigera* (Smith BG# 25793), a large tropical perennial that has been given the odd common name of the King Kong heliconia. The heliconia family, the Heliconiaceae, has a single genus within it but has 250 known species, many of which are among the most spectacular tropical blooms and are valued as garden ornaments and also for the cut-flower trade. Our specimen is

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The Long View continued

(Continued from page 5)

one of six species I collected seed of in 1992 in the rainforest understory on the banks of the Rio Napo of Ecuador, a tributary of the Rio Solimões and ultimately the Amazon River. The vivid blooms of heliconias have two basic forms, namely, pendant chains or upright, erect sequences of colorful bracts, from which emerge tubular, vividly colored flowers adapted for hummingbird pollination (see the Fall 2005 issue, pp. 5–6).

Our H. vellerigera bloomed once, ten years ago, and the long gap to its second flowering is probably due to our tendency to prune the plants as they get too big. It seems the plant has to be allowed to develop a certain number of its banana-like leaves before it sets a flower bud. This July I was happy to spot the furry bud peeking between the leaf petioles, and in the months that followed a chain of furry red bracts kept extending downward adding bract after bract (it numbers 23 over a 66 inch length as I write this in early October). From these bracts, small, canary yellow flowers peeked out, multiple blooms per bract, but always one at a time and over a considerable number of weeks. This perpetual flowering over many months is probably an adaptation that trains trap-lining pollinators, such as hummingbirds, to return multiple times much like the same hummingbird will return to a red sugar water dispenser hung on the back porch. Had our heliconia been growing outside, I’m sure it would have been the talk of the town, hummingbird-wise.

A third notable bloom, *Aspidistra grandiflora* (Smith BG# 10909), is a plant we acquired from the now closed Asiatica Nursery, a noted purveyor of rare Asian plants. This was a plant traced back to a collection by D. Harder (DKH 812) at Van Mai at Highway 7, 300–350 m elevation, in Vietnam. This locale was a source of some frustration for me to learn about, as I had passed right by the spot on a past plant collecting trip. To quote the catalog, “Big bold aspidistra from northern Vietnam with medium green leaves covered with uniform light yellow spots. The 2.5” wide flowers bloom at the soil line and would look comfortably at home in the Little Shop of Horrors. USDA Zones 8 to 11.” Beauty (or horror) is in the eye of the beholder as I found them fascinating, a sea anemone brought to the surface and attached to the base of a cluster of leaves. Out of a light green, red-speckled bulbous base, a dozen mahogany tenticular lobes spread in a starburst pattern, poised to protect a dark red, six-pointed star at the center. The lobes, once they wither, bend down to touch the soil, and these may form a pollination highway for the minute terrestrial crustaceans known as amphipods that have been identified as pollinators of some *Aspidistra* species. The number of *Aspidistra* species described has exploded in recent years due to new discoveries in China and Vietnam. We are currently swapping with a collector in South Carolina, so perhaps in future years we will have more novel blossoms on which to report.

These three wildly different flowers highlight a curatorial maxim: The more diverse our portfolio of accessions, the more value we create as a research tool and source of wonder.
The Delaware Valley region surrounding Philadelphia is rich with beautiful gardens and claims to have the highest concentration of public gardens in the world. One of my favorites—Chanticleer: A Pleasure Garden—is in the Philadelphia suburbs, just 15 miles from downtown, in Wayne, Pennsylvania. The garden is truly a treasure that lives up to its name. If you have never been there, it is definitely worth a visit. The garden is ever changing, from season to season and year to year. No matter how many times you’ve visited, there is always something you haven’t seen before.

My most recent visit was this past June, while attending the annual conference of the American Public Gardens Association. Chanticleer was one of the featured gardens and I spent an afternoon meandering through the ingeniously designed showcase of horticultural wonders. Our group benefited from a friendly competition between Chanticleer and Longwood Gardens (one of the other garden sponsors of the conference). As we wandered through the garden, food stations taunted us with delectable treats and a hot air balloon offered short, tethered rides. Since I’d been in a hot air balloon before, I figured I could forego that, but I could kick myself now as I wasn’t thinking about what a different view of the garden I might have gotten from the air! It is unlikely I will have the opportunity again.

In the early twentieth century, the area outside Philadelphia became a favorite country getaway. The Main Line of the Pennsylvania Railroad enabled wealthy businessmen to move their families to this rural paradise, from which they commuted to the city. Thus, Chanticleer began in 1913 as the country retreat for Christine and Adolph G. Rosengarten (Rosengarten & Sons, a pharmaceutical company, later became Merck). It was their son Adolph Jr. who had a great love for the property and to whom we should be grateful for having the foresight to arrange for the estate to be preserved and transformed into a public garden. The word *chanticleer* means “rooster,” and the rooster motif can be found throughout the garden.

Chris Woods, who began working for Adolph Rosengarten, Jr., as a gardener in 1983, became the first executive director of Chanticleer in 1990 on Rosengarten’s death. He oversaw the metamorphosis from private estate to public garden, which opened in 1993. It was Woods’ extraordinary vision that turned the garden into the place it is today: a stage for presenting horticultural feats as performance art. Yet, despite the extravagance in the horticultural arts, the garden is not gaudy. It is all done on a small, intimate scale.

Seven horticulturists are each responsible for their own specific area (in addition to grounds and facilities staff). Every year they generate new ideas, and they are given the freedom to be creative and the encouragement to take risks. This is definitely not a conservative way of gardening, and it continues today under the direction of Bill Thomas. He admits that there is a lot of pressure to do everything extraordinarily well and not settle for anything less. This year a production greenhouse was constructed (it won’t be open to the public). This will be a tremendous help—some observers have said that the garden has been operating “without a safety net.” Many of the staff also offer their considerable talents in other artistic arenas. They are responsible for the exquisite fences, bridges, gates, trellises, furniture, and drinking fountains seen throughout the gardens.

Of the forty-seven acres, thirty-five are public gardens and the other twelve acres are agricultural, woodland, and service areas. Together with expansive lawn areas, the large trees, many planted by the Rosengartens, form the backbone of Chanticleer. The main path, about a mile long, takes the visitor through the distinctive garden areas. The Teacup Garden at the entrance sets the stage with its Italianate fountain and overflowing flora. The spring display is replanted with lush tropicals for the summer, both in ground and in all kinds of containers, creating a symphony of bold colors and textures out of unique floral and foliar combinations.

Back on the path, a set of stone steps, with walls that also serve as planters, takes one down into a showcase of herbaceous plants that is the Tennis Court Garden. True to the form of the former tennis court, it is the most rectilinear and symmetrical of all the garden areas, featuring ribbons of color and texture, with a succession of blooms throughout the growing season. Again, everything is just a little beyond the ordinary. Past the arbor at the far end is the vegetable and cutting garden, and the newest area of the garden, Bell’s Woodland, featuring plants of eastern North America.

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Sitting atop a hill, the Chanticleer house has a viewing terrace that was added when the garden became public. It is a wonderful place to sit among the potted flora and take in the gardens below. The terrace is filled with extraordinary containers, over 150 of them, among which I spied a rare Wollemi pine, *Wollemia nobilis*. The Serpentine Garden below celebrates agricultural crops. The snaking beds create art out of the landscape. They have been planted in the past with sorghum, barley, cotton, wheat, oats, soybeans, and rapeseed. In the spring, the view features eighty thousand white and pale yellow narcissus in The Orchard below, plus scilla, chionodoxa, and blooming cherries, crabs, and magnolias.

Also in view of the terrace is the Pond Garden, consisting of a series of cascading ponds, bordered with lush vegetation. As in all areas of the garden, you won’t find any labels on the plants. The thinking is that it would detract from the aesthetic experience of the garden. Not to worry, however; there are extensive plant lists available in each area of the garden, and you can even download them from the Internet before your visit. You just have to know your plant material to know what is what!

The Ruin, the brainchild of Chris Woods, is sited on the footprint of Minder House, which had been the home of Adolph Rosengarten, Jr. The Ruin was designed to look like the remains of an old house and was actually “built” atop the old foundation after the house was torn down in 1999. The plantings give you a feeling of plants reclaiming an abandoned building. The stone sofa and chairs add to the atmosphere.

Minder Woods, in the center of the garden, and Asian Woods, on the far end, are shaded garden areas. Both offer quiet and a palette of greens. In Asian Woods you’ll find meandering trails and secluded resting areas, including a wonderful teahouse restroom. The building fits perfectly in the woods, amid the bamboo and meandering stream.

The garden is amazing considering it is only twenty-one years old. Throughout the different gardens and with the horticultural arts pushed to the limit, there is an aesthetic consciousness that creates a cohesive sense to the garden. It is a one-of-a-kind garden where everyone can experience beauty and even the sophisticated gardener is awed.
It has long been a tradition for Smith Horticulture students to hybridize mums when the annual Fall Chrysanthemum Show reaches its peak. Given the spectacular display of jewel-colored mums of garnet and ruby red, amethyst, topaz, and diamond white, and the array of ray and disk florets, the outcome of a successful pollination may be serendipitous rather than intentional. Try as I might, I broke the neck of a *Chrysanthemum × morifolium* ‘Lili Gallon’ standard while attempting to breed her with a mate that seemed apt to produce a certain offspring. I’ve yet to hybridize a mum successfully, a feat every student of horticulture strives to accomplish. When Madelaine Zadik shared the story of Ruth Crossman Pratt (see box), I was intrigued by the irony of the story and the magical display of mums cascading behind the spot where Madelaine stood. I paused to consider that there was some secret to mum hybridizing that eluded me.

Later I asked Madelaine about the woman who had created the extraordinary chrysanthemum. This mum is special to me because every autumn I am overwhelmed by the many choices of commercially grown mums, all of which saturate me after a fashion when their colors at last seem to bleed together in a haze of rust. If only I could find a pot of mums that had the fresh look of the oxeye daisy, *Leucanthemum vulgare*, the humble composite that makes my garden sparkle by moonlight and attracts bees and butterflies for weeks when gardens approach their zenith during the later weeks of July. Yet, I can find such a mum only at Smith College.

Last summer I contacted Ruth Crossman Pratt, the Smith College alumna who in 1939, the year she graduated, successfully created the hybrid mum that mimics an oxeye daisy. I visited her one hot July afternoon at Applewood, her Amherst residence. Ruth, now 93 years old, humbly recalled hybridizing her mum at Smith. “I don’t know what they thought was so special about it,” she said. “It looked just like a common daisy.” I learned that Ruth majored in Botany at Smith when, in 1939, it was possible to do so. Ruth’s niece, Lucile Pingree Gatchell, Smith class of 1966, also majored in Botany and successfully bred a mum that is a solid golden yellow. After graduation, Lucy worked as a biologist at Harvard University specializing in the diverse sexuality of fungi. Today she uses her background in horticulture to maintain all of her gardens herself.

After Ruth graduated from Smith College, her Botany major had a profound influence on her career path. She was interested in the “nitty gritty” of botany, especially the morphology of plants which was her concentration after graduation. She soon got a job at the Boston Children’s Hospital as an allergy specialist, comparing how cells similar to those in plants and animals develop. During World War II Ruth traveled overseas as a Red Cross worker. She worked with the injured as a

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social worker, spending four years in Australia, the Philippines, and Japan during the occupation. When she returned to the United States she settled in Amherst where she married, had children, and taught botany at the University of Massachusetts. Her observations of vegetation indigenous to the diverse climates of the South Pacific, such as the cooler temperatures of Australia compared to the heat and humidity of the Philippines, reminded her of her work at Smith. She recalled being a student of horticulture at Smith, where she worked with plots near Lyman Plant House according to how dry or wet they were to study the habits of specific plants.

Today, Ruth’s work as a horticulturist continues at Applewood, where she has served on the Applewood Garden & Arboretum Committee. Ruth gave me a tour of the Applewood Arboretum, with its Kentucky coffeetree, *Gymnocladus dioicus*, and Chinese lilac, *Syringa × chinensis* ‘Red Rothomagensis.’ She surmised that the lilac was most likely produced by root cuttings.

After the tour of the Arboretum at Applewood, Ruth invited me to see her latest horticultural experiment. Hanging from the ceiling of her terrace was a large canvas cylinder, almost a yard long, from which grew a tomato plant. With its robust stems and emerald green foliage reaching for the sun, the plant seemed to all but dwarf Ruth. Though a revolutionary design, for Ruth her topsy-turvy tomato was another horticultural challenge, much like the chrysanthemum she hybridized in 1939.
Landscapes for Learning
Gaby Immerman

Just 100 miles apart, the Smith College Botanic Garden and the Arnold Arboretum of Harvard University are connected by much more than the Massachusetts Turnpike. Both the Arnold Arboretum (founded in 1872) and the Smith College Botanic Garden (1895, see box) were created during a period marked by a great increase in the number of public botanical gardens, many affiliated with universities or other research centers.

Established with a bequest from James Arnold to Harvard University in 1872, the Arnold Arboretum was fundamentally conceived and shaped by its founding director, Charles Sprague Sargent. Although Sargent did not have botanical training as a Harvard undergraduate, he had managed the family estate in Brookline, Massachusetts, and worked as an understudy with Asa Gray, director of the Harvard Botanic Garden, assuming many of Gray’s administrative and teaching duties. Sargent served at the Arnold for over fifty years until his death in 1927. One of Sargent’s first and most formative decisions was to enlist Frederick Law Olmsted, already well known for his design of New York’s Central Park, in the planning and politicking surrounding the establishment of the Arnold, not just as an arboretum but as a vital component of the concurrently developed Emerald Necklace public park system in Boston. The novel plan, to donate the 265-acre portion of the Bussey estate to the city and lease it back for $1 per year in exchange for road construction and maintenance, abatement of taxes, police protection, and water, was approved in 1882 after what Sargent described as “five years of exceedingly disagreeable semipolitical work.”

Sargent and Olmsted developed the Arnold’s roads and pathways and organized the collection based on family and genus, following the then-current and widely accepted classification system of George Bentham and organized the collection based on family and genus, following the then-current and widely accepted classification system of George Bentham and Joseph Hooker as published in their Genera Plantarum (1862–1883). [Their morphological system was supplanted by the phylogenetic system of Engler and Prantl (see this issue, p. 3).] Olmsted’s design followed the existing contours of the land, and “laid out roads which snaked their way through valleys and up and down hills in a manner designed to provide a pleasing surprise around each curve.” Many drafts of the plan were created as the men plotted and revised the sequence of families, taking into account mature size as well as growth habit and site considerations for the various plant groups. The resultant design is considered one of Olmsted’s crowning achievements, and the Arnold has been recognized as a Frederick Law Olmsted National Historic Site and a National Historic Landmark.

On the other side of the state, Laurenus Clark Seelye, the first president of Smith College, was patterning Smith after the great medieval universities of Europe when he determined that the entire campus should serve as a botanical garden dedicated to scientific study and research. Professor William Ganong, the Botanic Garden’s first director, hired in 1894, saw Smith as the first college to combine aesthetic beauty with a scientifically arranged botanic garden, a strategy successfully implemented in Europe in places like Pisa and Padua, Italy, but never before attempted in the United States. Recognizing the need to balance the aesthetic, educational, and scientific needs of the campus, President Seelye commissioned Olmsted’s landscape architecture firm, Olmsted, Olmsted and Eliot, of Brookline, to lay out a master plan for the campus. The design was marked by classic Olmstedian curved drives and walkways, open spaces with specimen trees, and long vistas to the Mill River and Paradise Pond. The pastoral, naturalistic landscapes interspersed with scientifically grouped plantings are hallmarks of both institutions.

The trustees of James Arnold’s estate gave Charles Sargent a broad mission to grow at the proposed site in what is now Jamaica Plain “all the trees, shrubs, and herbaceous plants, either indigenous or exotic, which can be raised in the open air.” From the start, Sargent established the Arnold Arboretum as the American center of plant introduction and distribution. It was Asa Gray who reminded Sargent of the climatic compatibility between eastern North America and East Asia. Through Sargent’s own travels and later those of E.H. Wilson and others, the Arnold introduced countless species and varieties to its own grounds and ultimately to gardens throughout North America.

Smith’s new botanical garden benefited from the great interest in and new availability of species from Asia. Smith’s collection includes impressive specimens of ginkgo, Ginkgo biloba; katsura, Cercidiphyllum japonicum; paulownia, Paulownia tomentosa; amur cork, Phellodendron amurense; zelkova, Zelkova serrata; scholar tree, Sophora japonica; and umbrella pine, Sciadopitys verticillata; to name a few species whose North American introductions date to that time. Although individual plants cannot always be traced back to the Arnold, Smith’s collection includes a multitude of species that were introduced into cultivation in the United States by the Arnold: rare gems like dove tree, Davidia involucrata, and cedar of Lebanon, Cedrus libani, as well as garden staples such as Buddleja davidii, Acer griseum, Abies concolor, Liquidambar orientalis, Malus sargentii, and Pachysandra terminalis ‘Variegata.’

Some sleuthing in the archival records at Smith and Harvard turned up tantalizing evidence of plant exchanges, though neither institution has detailed records going back to the founding years in the late 1800s. At Smith, Ganong faced the daunting challenge (Continued on page 12)
of implementing the design for the campus laid out in 1893. President Seelye’s instructions were clear: The entire grounds should serve as botanical gardens, with plant materials selected and grouped to serve aesthetic and scientific purposes.

Director Ganong kept a ledger book “Containing Records of Plants, Seeds, etc. received from other Institutions, and sent to them.” Sources included the Royal Botanic Garden in Buitenzorg, Java, and Tokyo Imperial University. Dominating the donations in number and quantity was the Arnold Arboretum. Ganong’s ledger indicated “the full list of species being contained in the official letter book”; however, no such volume has been located in the archives of Smith College or the Botanic Garden. One noteworthy entry recorded the receipt of “24 specimens of Chrysanthemums—roots—a gift to the Garden from Mr. Jackson Dawson Jr. of the Bussey Institution.” Perhaps these were the original materials for Smith’s first Chrysanthemum Show in 1900.

Archivists Lisa Pierson and Sheila Connor at the Arnold Arboretum turned up a ledger book kept by the same Jackson Dawson, who was the Arnold’s original propagator and whose skills in coaxing mysterious foreign seeds and cuttings to life were legendary. Dawson’s penciled notes from November 1895 listed 151 plants in 86 species sent to Smith College, and featured Cornus kousa, the native species Betula nigra and Ilex glabra, as well as numerous Arnold introductions, among them Rhododendron obtusum var. kaempferi and Aesculus glabra. Despite the two parallel sources, matched by date, there is no way to confirm whether any of the plants shipped to Smith in the 1890s, and planted on campus, remain alive today, more than a century later.

There are, however, many plants in the Smith collection whose origins can be traced to the Arnold. The Smith BG-BASE database currently lists 95 live specimens with Arnold provenance, including the magnificent Stewartia koreana behind Tyler House, grown from seed gathered at the Arnold in 1952. In 1994, Smith received three plants of Syringa vulgaris ‘Krasavitsa Moskvy,’ propagated from the Arnold’s renowned lilac collection; one of these stands as a memorial planting in Capen Garden. The weeping cherry Prunus × ‘Hally Jolivette’ was bred by Karl Sax, who served as director of the Arnold in the 1950s; a plant provided to Smith in September 1992 graces the western entrance of Seelye Hall. Another example of the Arnold’s botanical impact is the pair of mature katsuras that dominate the interior courtyard of King and Scales houses at the Quadrangle; they were received as plants from the Arnold in 1972.

Surely the most storied species with a shared Smith–Arnold pedigree is the dawn redwood, Metasequoia glyptostroboides. As recently as 30 million years ago, this species and its relative, the coastal redwood, Sequoia sempervirens, were distributed throughout the Northern Hemisphere. As the climate grew colder and drier, the Metasequoia was thought to have become extinct. In 1944, a collecting expedition from the Arnold confirmed healthy trees that had been observed in 1941 by Chinese botanists in the remote interior Shui-hsa Valley of China. A second Arnold expedition in 1947 brought back seeds that were distributed to several botanical institutions including Smith College. By the mid-1960s, one of the seeds germinated in the Lyman Plant House had reached a height of 60 feet; the tree now towers over Neilson Library on Burton Lawn.

The aesthetically pleasing yet scientifically planned grounds of the two institutions echo one another in design and execution. The “find and disperse” mission of C. S. Sargent and the Arnold Arboretum profoundly enriched the Smith College Botanic Garden in establishing its landscape for learning. As will be described in a future article, the Arnold and Smith have since mutually benefited from the exchange of human resources as well.

**News in Brief**

**Connie Parks**

**Cornelia Hahn Oberlander ’44 wins 2011 Jellicoe Award from IFLA**

In June the International Federation of Landscape Architects (IFLA) bestowed its highest honor, the 2011 Sir Geoffrey Jellicoe Award, to Smith alumna Cornelia Hahn Oberlander for her outstanding contribution to Landscape Architecture. By age 11 Cornelia had just one goal—to become a landscape architect and design urban outdoor spaces that all people could enjoy—and she excelled at all aspects of the art, including planning, research, design, and management, while holding utmost concern for the environment and people. Over her six-decade career first working with local low-income communities in the Vancouver area and then expanding nationally to Canada, continentally to North America, and globally to promote sustainability, Cornelia designed playgrounds, parks, and other public spaces. Notable projects include the Museum of Anthropology at the University of British Columbia (1976), Robson Square Law Courts in Vancouver (1983), the Yellowknife Legislative Assembly Building and Capital Site (1994), and the New York Times Building Courtyard (2007). Cornelia has served on the Advisory Committee of the Friends of the Botanic Garden of Smith College since its inception. With Shavaun Towers ’71 she developed the Landscape Master Plan for the Botanic Garden of Smith College, which was adopted by the College Board of Trustees in 1996.

In making the award, the IFLA recognized Cornelia’s ability to work on interdisciplinary teams including architects and engineers. Cornelia’s motto for solving difficult tasks on each project is the five P’s: persistence, patience, politeness, professionalism, and passion. She regularly shares her knowledge through publications, exhibitions, and lectures. I recall one visit to Smith where Cornelia emphasized the importance of reaching young people, especially the very young; her passion is inspirational and keeps me, for one, coming back to the Botanic Garden to lead tours for schoolchildren. Please, Cornelia, never retire!

**Springfield tornado damage assessed with Botanic Garden assistance**

The U.S. Forest Service coordinated an Urban Forest Strike Team, the first to be used in the Northeast, to assess damage after the June 1 Springfield tornado, an EF3 twister with top winds of 160 mph that traveled 39 miles from Westfield to Charlton, Massachusetts. Jay Girard, the Botanic Garden’s landscape manager, with the support of the college, donated several days of work in late August as a task specialist. (Jay previously aided the Worcester Asian longhorned beetle eradication; see the Spring 2011 newsletter, p. 2.) The team, 21 arborists and urban foresters, went in after most of the cleanup was done; they assessed storm-damaged trees and stumps and inventoried over 2000 tree planting spaces in advance of replanting this fall. In addition to rating the quality of the cleanup and providing GPS points for any hazard trees, Jay helped identify what trees were lost, often Norway maples that had been placed streetside by citizens (Norway maple is often mistaken for sugar maple). Trees play a major role in cities in moderating climate and discouraging crime. The Springfield tornado of 2011 and the October 2011 snowstorm underscore the need to develop and train future generations of urban foresters.

**First year orientation**

The Friends of the Botanic Garden of Smith College greet each new Smithie with a card informing her that an ivy plant awaits her at Lyman Conservatory. A First Year Orientation event led this fall by Horticulture Lab Instructor Gaby Immerman was attended by 41 first years. The students learned to propagate plants by stem cuttings, producing little plants to grace their new dorm rooms. Many expressed interest in taking horticulture classes or otherwise connecting to the Botanic Garden during their time at Smith.

**MHS awards**

In September Smith horticulturists were honored by the Massachusetts Horticultural Society (MHS). At the 2011 Honorary Medals Gala held to recognize superior achievements in horticulture, Lynden B. Miller ’60 received the prestigious George Robert White Medal of Honor for her work as a designer of urban parks. Lynden has served on the Advisory Committee of the Friends of the Smith College Botanic Garden since 1999 (see the profile of Lynden in the Spring 2010 issue, pp. 5–6). Smith’s Conservatory Manager Rob Nicholson accepted an MHS silver medal on behalf of the Lyman Plant House of the Botanic Garden of Smith College. This year marks Rob’s twentieth Bulb and Mum shows at Smith.
In Memoriam: Betty Conway MFA ’50

On September 22, 2011, the Smith College Botanic Garden Volunteers lost Mae E. “Betty” Conway, a longtime member. Born February 25, 1921, Betty was artistically inclined from childhood. She earned a bachelor’s degree in fine arts at the College of New Rochelle (1943) and taught in New York, Connecticut, and Fall River before moving to Northampton in 1946. She studied Fine Arts at Smith College, receiving her master’s in 1950. In the words of her niece Jayne Conway, “Adept at many art forms, she painted for the sheer joy of it. She captured on canvas the essence of a mood, a personality, or the spirit of a place with exceptional vitality and exuberance.” At a memorial celebration of her life held October 22 at the Smith College Conference Center (formerly the Faculty Club), her family organized a retrospective exhibit of her paintings, which were seldom shown during her lifetime.

“Miss Conway” lived her professional life as an art teacher in the Northampton public schools, retiring in 1984 after a 38-year career. Betty loved learning and loved teaching, always ready to learn new skills to match the interests of her students. She recognized that all children are artists, equipped with the powerful tools of imagination, curiosity, and emotion. She taught nearly every child and teen-ager in town and mentored Smith student teachers. She also donated her expertise in graphic design, set and costume design, and calligraphy to many local organizations. Recalled her former student and fellow Botanic Garden volunteer Kingsley Sullivan, “She lived on Massasoit Street at the corner of Arlington. I would see her walking all over her neighborhood. She was happy to stop and chat with all who invited her onto their porch.”

In her retirement Betty participated in many groups. Besides volunteering at the Botanic Garden, where she thoroughly enjoyed greeting visitors at the reception desk, she was an active member of the Monday Sketchers, the Smith College Alumnae Association, book clubs, the Fortnightly Club, and others. Said Botanic Garden volunteer Gail Gaustad, “Betty had a happy nature and will always be remembered as the most cheerful and willing member of a group.” As befits a playful, inquisitive spirit with an eye for fine art, including the fine art of landscape design, Betty had a secret love for the Smith Botanic Garden. She will be greatly missed.

The Year of Coning and Fruiting Heavily

WHAT is going on with arbor vitae, sugar maple, and (fill in the blank) this year? Have you ever seen so many cones, fruits, or seeds? A reasonable expectation would be that last year’s growing conditions were quite favorable—lots of sun giving lots of sugars giving lots of plant growth. Jay Girard, landscape manager at the Smith Botanic Garden, offered another explanation: plant stress. Last summer’s drought may have induced a stress response in many woody plants, causing growing tips to turn from vegetative to reproductive apices.

Conventional wisdom holds that the phenomenon of masting, where plants (especially woody plants) have large, erratic, and often synchronized variation in seed production, is an adaptation to seed predation. Overabundance of seed satiates predators so that some seed escapes predation. Masting is variable, however, and plants exhibit a continuum in the trait. Some ecologists offer an alternative explanation, namely, that masting can be explained as a result of wind pollination, which is more efficient as pollen densities increase. In any case, next year’s gardens are likely to be assaulted by a plague of maple seedlings.
**Student Updates**

Emily Barbour ’14, former Horticulture student, writes about her program last summer with the School for Field Studies,

Costa Rica is great. We just finished a research project today in which we counted epiphytes on campus. I’m the only one who remembered what bromeliads are. My knowledge of bananas also came in handy when we went to a Dole plantation, and we’re going to a coffee plantation tomorrow. I’ve been giving lectures at lunchtime on correct classification of fruits, so Horticulture class has definitely stuck with me.

Kathryn Ryan ’11, former Horticulture student, writes about her summer at the Smithsonian,

I am a grounds intern at the Victory and Heirloom gardens, both at the American History Museum. I’m learning a lot of horticulture basics. I’m a pro at deadheading and I’m beginning to be able to tell when a plant needs a particular nutrient. A few weeks ago I used the word “node” and my supervisor was impressed. I have the Botanic Garden to thank for that!

Landon Newton ’11J, former Botanic Garden summer intern, writes about her new job with Lynden B. Miller ’60,

I am working for Lynden Miller as an office assistant, organizing her archival papers. Lynden is teaching a 7 week course at New York University and I will be her teaching assistant. But the most exciting thing now is that I am going to start going on site visits with her, which I am really looking forward to. I am also going to take a few classes at the New York Botanical Garden on soil science and horticulture to keep me sharp.

Elise Simons ’09, former Botanic Garden summer intern, writes,

I’m absolutely loving Peace Corps Zambia. My major program these days is centered on agroforestry. I have a demonstration plot dug with “conservation farming basins” (so called because they are both labor-saving and environmentally friendly, preventing soil erosion and breaking the hardpan so crop roots can grow deeper, allowing more crops to be planted in one field) and will soon be planting it with a mixture of maize, soybeans, sunflowers (used for cooking oil), and trees, many of which have been preplanted in a tree nursery nearby in my garden. The best part is that I’ve been getting the local farmers to do most of the digging and planting with/for me, so I’m not just showing them, I’m teaching them. They should have some healthy, sustainable tree-integrated crop systems going in a few years. I miss Smith very much, and still feel very connected to the physical campus, thanks to the time I spent on it as a Botanic Garden intern. ☞

**Library Additions**

We regularly add to the holdings of the Smith College and Botanic Garden libraries using the Margaret D. Smock and Mina K. Curtiss Funds for book purchases. The gift of the 17th-century *Ambonese Herbal* by Rumphius detailing the natural history of Ambon Island, Indonesia, translated from the Dutch and annotated by the late E.M. Beeckman of the University of Massachusetts Amherst, was kindly donated by Kathy and John Scarborough in remembrance of their friend Monty Beekman. (See Lynn Margulis’ interview with Monty at www.youtube.com/watch?v=8hQGk31uW78.) Here’s a sampling of titles received since 2007:


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