Walk into the Church Exhibition Gallery at the Lyman Plant House through December 15 and you will be greeted by over one hundred different flower pots, in all shapes and sizes, some weighing almost 200 pounds! No, we have not turned the Gallery into a shopping emporium. These pots are part of *A Place to Take Root: A History of Flowerpots and Garden Containers in North America*, the first exhibit devoted to the evolution of the common flower pot.

*(Continued on page 4)*
Leaving for Vegas

We were panic stricken earlier this year when Tracy Omar, our Collections Manager, announced that he had accepted a new position as Registrar for the Las Vegas Springs Reserve in Nevada.

Tracy came to us in August of 2002 with extensive experience in the field of collections management. His previous positions included Curator at J.R. O’Neil Botanic Garden in the British Virgin Islands, Curator of Living Collections at the Desert Botanical Garden in Phoenix, and Curatorial Assistant and Plant Registrar at the Washington Park Arboretum in Seattle. With such a geographic spread, Tracy’s knowledge of plant material was broad, a particularly helpful trait since the Lyman Conservatory houses many tropical, subtropical, and desert species. His accomplishments at the Botanic Garden included completing computer mapping of about 80 percent of the trees on campus, using GPS for tree locations, working with Physical Plant to coordinate our maps with those of underground utilities, revamping our labeling procedures, managing our Index Seminum (international seed exchange program), and most importantly computerizing much of our old paper records, giving us better access to all the data supporting our collection. He trained many students and volunteers, and gave us sound advice on many occasions.

We know that Tracy will be successful in his new position. It is typical of Tracy to come into an organization and get their collections systems organized. He did this for Smith College and he will do it in his new role where he will be responsible for inventory, records management, and cataloging for biological, botanical, and archeological collections associated with the Reserve.

On behalf of the Botanic Garden staff we thank Tracy for his outstanding contributions and professionalism during his three-year stay at Smith College.

Following an international search that yielded over 80 applicants, we are pleased to announce that we have hired Elaine Chittenden as our new Manager of Living Collections. We are thrilled to have someone with so much experience join the Botanic Garden. Elaine introduces herself in the article on page 3.

Michael Marcotrigiano
Returning to My Roots

When I first saw the position announcement and description for the Manager of Living Collections at the Botanic Garden of Smith College, it took my breath away! My last full-time and most wonderful job was serving as Collections Manager for the W. J. Beal Botanical Garden of Michigan State University (MSU) in East Lansing for over 10 years. Beal Garden is one of the principal centers of plant interest within the arboretum-like campus of MSU, packed with diverse plant material and detailed interpretive labels. Those collections focus on themes of natural plant diversity, economic botany, ecology, and plant conservation with an emphasis on the Great Lakes region. Like the Botanic Garden at Smith, Beal Garden participates in the international seed exchange program, commonly referred to as Index Seminum, and has a systematic section, where plants are grouped by family and the families arranged according to a particular classification system. Additionally Beal Garden maintains the only public endangered and threatened species plant collection of Michigan, as well as 50 beds containing economically important plants ranging from oil plants, injurious plants (e.g., poison ivy and ragweed), perfume and fiber plants, to weeds, dye plants, Native American food plants, vegetables and their progenitors, and medicinal plants. Surrounding the main collections are the ecological slopes representing Michigan, European, and western U.S. floras, the riparian area of the Red Cedar River, one of three athletics buildings, and MSU’s main library. Visit the W. J. Beal Botanical Garden online at www.cpa.msu.edu/beal.

Some of my accomplishments at Beal include establishing and maintaining the volunteer program, verifying the identity of the plants in the collections and writing interpretive labels for over 1000 species within various collections, performing inventories and maintaining all BGBase files (computerized database) associated with Beal Garden collections, rehabilitating the ecological slopes and Michigan wetland plants collection, collecting seed and refining procedures for production of the Index Seminum, and providing local and international outreach. Due to an economic downturn in Michigan and subsequent budget cuts, the position was eliminated in the fall of 2003. Since the spring of 2004 I have been freelancing as either one-woman-and-a-wheelbarrow or backyard botanist, hence my reaction to learning that Smith College needed a collections manager.

Prior to working at MSU I worked for The Nature Conservancy as a field botanist and protection specialist, performing rare plant surveys and inventories (including a 146,000 acre military reservation) and establishing a landowner contact program for private landowners with Great Lakes shoreline endemics on their property. Previously, while earning a master’s degree in botany at MSU, I worked as a biology teaching assistant and in MSU’s herbarium (ask me about the value of dead plants sometime). I attribute my move to Michigan to Howard W. Pfeifer (University of Connecticut professor) who inspired me during his last year teaching angiosperm taxonomy. He subsequently recommended people I might study with, scientists who still dealt with whole plants and not just their DNA. Howard had a personal story or joke for every plant family covered in that class. If there are any Pfeifer students reading this, I would appreciate help in putting together a list of “Pfeiferisms.” They are still funny and have great sentimental value to me.

My heritage and growing up in rural Suffield, Connecticut, near the Connecticut River provides me with the pedigree of a swamp Yankee. My love for plants started at an early age and was fostered by one of the first ecologically oriented 4-H Clubs (Help Our Environment—H.O.E.), started by the conservation-minded farmer Chuck Rogalla. It was the 1970s, prior to any bottle bill legislation, and our 4-H group was picking up roadside trash and recycling glass via monthly collections at the local A&P. We used the money earned from glass recycling to fund a trip to North Carolina (my first travel experience) to showcase our club’s work in controlling gypsy moth infestations in southern New England.

I am grateful for those early experiences and the numerous people and places that furthered my interest in plants and carried me to this point. Some of them include my hometown’s high school vocational agriculture program, working on shade tobacco, working as a florist, being the gardener counselor at Camp Treetops in Lake Placid, studying floriculture at Ratcliffe Hicks School of Agriculture at UConn, working in small private gardens for the likes of rhododendron and orchid breeder Dr. Gustav Mehlquist and landscape architect Maud Sargent, being a student of the Harvard Summer School with P. B. Tomlinson and Peter Stevens at Fairchild Tropical Garden in Coral Gables, Florida, and interning at the Marie Selby Botanical Gardens in Sarasota, Florida. There is one word that, for me, summarizes all of the above and that is sankofa, a Ghanian word illustrated by a bird looking backward and meaning “one must return to the past in order to move forward.” I am thrilled to have returned to my roots here in New England and at Smith College.

The Akan people of Ghana and La Côte d’Ivoire make great use of symbols. The word sankofa is derived from san (return), ko (go), fa (look, seek, and take). It represents a quest for knowledge, based on critical examination, and intelligent and patient investigation. The symbol is based on a mythical bird that flies forward with its head turned backward, reflecting the Akan belief that the past serves as a guide for building the future.

See the Akan Cultural Symbols Project: www.marshall.edu/akanart
The exhibit brings to life the history of the flowerpot from ancient Egypt to the present day. You can see finely detailed Italian terra-cotta, wood and cast-iron French tree tubs, an English horticultureware rhubarb forcer, traditional regional American pots, and the latest in plastic orchid pots and ornamental urns. Also featured is the flowerpot designed by Guy Wolff especially for the Botanic Garden’s centennial celebration in 1995.

The exhibition was curated by garden historian Susan Tamulevich, author of *Dumbarton Oaks: Garden Into Art*, and principal of *Horticurious*, a company that creates touring exhibitions on botanical subjects.
This summer I interned for Dr. John W. Kress, chair of the Botany Department at the Smithsonian Natural History Museum. Dr. Kress, who specializes in the plant order Zingiberales, and his colleague Dr. Ethan J. Temeles, professor of ecology at Amherst College, are coauthors of a 2003 Science cover article entitled “Adaptation in a Plant–Hummingbird Association” (Vol. 300, Issue 5619, 25 April 2003).

This study is a prime example of coevolution between tropical angiosperms, Heliconia caribaea and H. bihai, and their pollinator, the purple-throated carib hummingbird, Eulampis jugularis. The purple-throated carib, attracted by brightly colored bracts of tubular helonica flowers, feeds on floral nectar. In the process of feeding, pollen is deposited on the head of the hummingbird as it brushes past the anthers. The hummingbird then inadvertently pollinates the next flower it visits when the pollen is transferred to that flower’s stigma.

Heliconia caribaea and H. bihai differ in that the flowers of H. caribaea are shorter and less curved than H. bihai flowers. Interestingly, the purple-throated carib displays the most extreme sexual dimorphism of any hummingbird species; the male has a short, slightly curved bill compared with the female’s long bill that is twice as curved. In this study, Temeles and Kress proposed that the male purple-throated carib, whose bill corresponds to H. caribaea flowers, is the principal pollinator of this species, whereas the female purple-throated carib is the primary pollinator of H. bihai.

The story becomes quite complex when various color morphs on different islands of the Lesser Antilles are taken into account. On St. Lucia, located on the northern end of the island archipelago, H. caribaea is scarce, but one of two H. bihai morphs has longer, curved flowers to “accommodate” the females. Conversely, on Dominica, further south, two morphs of H. caribaea are present in addition to an abundance of one H. bihai morph. The goal of the research is to observe heliconia–hummingbird pollination systems on selected islands along the archipelago. It is hypothesized that a continuum exists along the islands, with predominantly H. caribaea morphs in the north and predominantly H. bihai morphs in the south.

Dr. Kress and I joined Vinita Gowda (a student working on her PhD with Dr. Kress) in the field on the islands of Dominica and St. Kitts. We arrived in mid-June and I assisted Vinita for a month, leaving in mid-July. At this time of year it was the rainy season and H. caribaea was about done flowering when we left, whereas the flowering of H. bihai was tapering off more slowly. It was also apparent that the red H. caribaea morph finished flowering sooner than the yellow morph.

Heliconia bihai occurs at high altitudes. St. Kitts has only one location where H. bihai grows abundantly (population of about 30) at the top of an inactive volcano, just beneath a pond formed by the crater. This was not designated as a plot under observation because it was a very difficult and time-consuming hike to the site. Therefore, there were two plots of H. caribaea on St. Kitts and no plots of H. bihai. Heliconia bihai is much more abundant on Dominica, which is a larger and much more mountainous island, with a

(Continued on page 6)
greater area of high land. On Dominica, Vinita established two plots of each species.

There’s no doubt that the female purple-throat is the sole pollinator of *H. bihai*, since we observed only females at such high elevations. The only other hummingbirds we saw on the mountaintops of Dominica were occasional Antillean-crested or blue-headed hummingbirds, which have bills too short to feed on heliconia flowers. The female purple-throats display a feeding pattern known as streamlining, in which they cover a large area without being loyal to any particular clump. It did appear that females were feeding in a distinct pattern, appearing in the same plot at a certain time of day. It was a wonder to witness these 10-gram birds flying on the top of the mountain, since it was very gusty and foggy, but they managed to fly up regardless of the wind. Dr. Kress speculates that the females may be nesting at high elevations where they have a reliable nectar source, without males to contend with.

The male purple-throats, on the other hand, were adamantly defending sizable clumps of *H. caribaea* at low elevations. We observed them consistently chasing out other species of hummingbirds (the green-throated hummingbird was a major competitor), much larger birds (primarily bullfinches and bananaquits), as well as female purple-throats. They expended a great amount of energy aggressively chasing intruders such that they needed to feed very frequently inside their territory. In some plots, it seemed that by the end of the day, males were actually abandoning their territory, which must have been exhausted of nectar, and heading into other territories.

Vinita is focusing her research on heliconia phenology, the annual reproductive cycle, as well as the daily cycle of nectar production. Another part of her work constitutes an analysis of genetic diversity within populations. We collected heliconia seeds that were brought back to the labs in Washington, D.C., for analysis. She hypothesizes that *H. bihai* populations, in which the primary means of pollination is streamlining, will be much more genetically diverse, than *H. caribaea* populations. For her research she is measuring flower number, flower length, curvature, nectar production, sugar content of nectar, and fruit number.

After this summer’s work, Dr. Kress said that he considers the green-throated carib as a more significant player in the pollination system than he had previously suspected. The green-throated carib most closely resembles the male purple-throated carib in size, beak length, and aggression toward the other hummingbird heliconia pollinators. We observed male green-throats competing almost exclusively with purple-throats. Male green-throats were most aggressive on St. Kitts, where they sometimes chased the territorial purple-throat out of its own territory! Dr. Kress hypothesized that this unusual behavior may be due to the island’s small size and much disturbed landscape with less abundant heliconia (due to sugarcane fields).

Dr. Kress also pointed out that loyalty of males and females to different color morphs might be less distinct than he had previously hypothesized, since we observed both sexes visiting both *H. caribaea* morphs frequently on both islands.

Kress and Temeles have ambitious plans for the future. Until now their study has relied on observation in natural settings, but they hope to create controlled experiments to test their hypotheses. They intend to set up an enclosed mesh greenhouse in which there will be *Heliconia caribaea* and *H. bihai* plants growing in pots on wheels so that the plants can be configured into clumps in different arrangements. Hummingbirds will then be released into the enclosed area and their movement and species/morph preferences will be tracked. Dr. Kress was very excited because during our stay on Dominica we may have found the ideal site for them to carry out such experiments.

While it is clear that the relationship of the heliconia and the hummingbird is not fully elucidated, this summer’s work added more data that can be used to refine future research.
The N’tumbo of Angola

Rob Nicholson

“It is out of the question the most wonderful plant ever brought to this country, and the very ugliest.”
J.D. Hooker, Director, Kew Gardens, 1866-1885

The N’tumbo or welwitschia, Welwitschia mirabilis, is one of the most enigmatic and fascinating plants known to botany and was dubbed by Charles Darwin as “the platypus of the plant world.” The first scientific collection was by Frederic Welwitsch in 1859 in Angola and he recorded that the indigenous people knew it by the name N’tumbo. Other populations were soon found and now wild plants are known only from the two southwest African nations of Angola and Namibia.

Most people are surprised to find out that welwitschia is a gymnosperm, the botanical group of plants that includes the familiar pines, spruces, and firs and also yew, cycads, and ephedra. Welwitschia, Ephedra, and the tropical broadleafed gymnosperm Gnetum form a group of plant families known as the Gnetales. They have been proposed as the link between more primitive gymnosperms and angiosperms (flowering plants) based on cellular structure and the results of molecular studies. Although fossil pollen is known from this group, macrofossils are rare, so the Gnetales are still a hotly debated.

Welwitschia grows in the extremely arid desert regions of southwest Africa along a spotty 750 mile range but can also be found in less arid savanna habitats. Those populations in the Namib Desert receive no rainfall or as little as 100 millimeters a year (about 4 inches). However, many populations are close to the coast and receive ample fog, which ecologists have found is absorbed into the plant’s leaves in the early morning hours.

The plant is dioecious, meaning male and female cones occur on separate individuals. Rather than growing as a tree or shrub, like the majority of gymnosperms, welwitschia is a squat perennial plant with a short woody stem and an exceedingly long taproot. Only two leaves are formed during the plant’s entire life and these keep growing out from the short stem. The fierce desert winds whip the leaves around, splitting them and giving old wild plants the look of a pile of shredded plastic ribbons. Some leaves have been measured at 1.8 meters wide and 6.2 meters long. Based on the known growth rate of the leaves, scientists have speculated such plants may be 1000 years old.

The Botanic Garden’s specimens, now located in the glass hallway near the public restrooms, were grown from seed sent to us from the Munich Botanic Garden and were germinated in March of 2005.

Propagation of welwitschia is tricky and we have only had one successful germination of seed in the past. Newly germinated seedlings seem very susceptible to the fungal disease “damping off,” so extreme care must be taken in the first 6-9 months, not to have moisture around the newly emerged stem. Watering can be accomplished by bottom watering, placing the pot in a low dish of water. We also developed a new technique, where a small plastic water cup with holes punched in the bottom is inserted into the soil mix next to the newly germinated seedling. The water is poured only into the cup and enters the medium a few inches below the surface, away from the stem, but within the root zone. We had successful germination of 4 out of 12 seeds, and 3 of these survived using this watering technique. Due to their taproots, they must be “planted high” in a freely draining succulent mix, in long ceramic drainpipes, and are watered as we would for cactus and succulents. When the three seedlings were moved to their permanent display location in September of 2005, their leaves were 3 1/2 inches long. We await the results of a thousand years’ growth.

Additional reading:
Gymnosperm Database: www.conifers.org/we
Some new tree additions to the campus landscape:

**Eucomia ulmoides** – hardy rubber tree. A Chinese species that is slow growing and attains a height of only 30 feet over 20 years, it actually can produce rubber but not economically. We hope they like our campus. Two are being planted, one in front of Hubbard and the other near the parking lot up from Lyman Plant House.

**Ulmus ‘Commendation’** and **Ulmus ‘Vanguard’** – hybrid elms. Two disease-resistant elms will be added to the Green Street planting that features many alternative elms (i.e., not American elm) for street trees.

**Ulmus ‘Frontier’** – Frontier elm. This complex elm hybrid is one of the few with nice fall color. A relatively small tree at maturity, it tops off at 30 feet. Two will be added to campus, one near the Ada Comstock Lounge (Hopkins), the other in between Lamont and Gillette.

**Ulmus americana ‘Valley Forge’** – Valley Forge American elm. Touted to be the most disease-resistant American elm, it will be planted on College Lane not far from the main gate. It will eventually replace the shade that will be lost by the failing sugar maples on College Lane. The number of elms on campus has decreased over the past 20 years because seedling-derived ones eventually succumb to Dutch elm disease. We hope Valley Forge fares better.

**Celtis occidentalis** – common hackberry. Related to elms, this native is considered to be one of the toughest trees to kill. A relatively small tree at maturity, it tops off at 30 feet. Two will be added to campus, one near the Ada Comstock Lounge (Hopkins), the other in between Lamont and Gillette.

**Magnolia macrophylla** – bigleaf magnolia. An interesting magnolia native to the southeastern United States, it has huge deciduous leaves and huge creamy white flowers. It will be planted behind 7 College Lane.

Several older trees have become unsafe, mandating their removal:

**Aesculus hippocastanum** – horsechestnut. Located at the west side of Helen Hills Hills Chapel, this two-trunked specimen has been cabled for years. A rapidly enlarging rotten cavity at the base makes it too dangerous to remain there.

**Acer saccharum** – sugar maple. Several roadside sugar maples, some not that old, are succumbing to the combined stresses of drought, road salt, road widening, and compaction caused by construction. Takedowns include one on Chapin Lawn near the Campus Center and one down from the President’s House heading toward Paradise Pond. Within the next few years, we expect at least three more sugar maples to be near death on College Lane, just inside the campus gates. Sugar maples are failing elsewhere in urban New England settings.

**Quercus rubra** – red oak. One of the oaks in the row in front of Neilson Library (near Hatfield Hall) has been declining ever since major underground utilities work was done there years back. This is an unfortunate loss since it shortens a long row of old trees.

If you are interested in supporting our tree-planting campaign by adopting or memorializing a tree on campus, please call us or read about it at [www.smith.edu/garden/Giving/donations.html](http://www.smith.edu/garden/Giving/donations.html)
On a recent trip to the Pacific Northwest I took the time to venture into inner city Portland, Oregon, to visit a new and remarkable garden: the classical Chinese garden called Lan Su Yuan, or the Garden of Awakening Orchids. After a year of construction and an expenditure of over 12 million dollars, Lan Su Yuan opened in September of 2000. Expected to draw 100,000 visitors in year one, it drew over 170,000 in the first nine months. Even knowing it was popular, I was very surprised when my eyes took in the first glimpse of what may be the finest and most authentic Chinese garden built in the United States.

Portland has a sister-city relationship with the Chinese city of Suzhou, and it is through this relationship that the concept of this garden grew. In 1989 the Classical Chinese Garden Society was formed with the goal of creating an authentic Chinese garden in downtown Portland. Discussions with the Chinese, Portland’s mayor Vera Katz, and civic leader Bill Naito began in the early 1990s and not long after fund-raising and planning began. After obtaining a land lease from Northwest Natural Gas, design began.

The garden takes up a small city block of approximately 40,000 square feet. Yet, at less than an acre it offers more than gardens ten times the size. The five elements—water, stone, plants, architecture, and literature—all essential to Chinese gardens, are wonderfully interwoven. The huge central lake or pond, named Lake Zither, is about 8,000 square feet and can be seen from many angles, each one evoking a unique look.

Lan Su Yuan was designed by Kuang Zhen Yan, a member of the Institute of Landscape Architectural Design in China. It is based on an urban garden style dating back to the thirteenth century. Assisted by local contractors, 65 Chinese artisans constructed the garden. The trees and plants were selected by He Feng Chun of the Institute. Supporting the Chinese team was the architecture firm of Robertson Merryman Barnes, who were responsible for infrastructure and assuring that local building and design codes were followed. Safety concerns, e.g., Portland’s seismic building codes, had to be addressed and certain modern materials needed to be used, e.g., silicone to attach roofing tiles. In no way is one aware of this, and design authenticity was not compromised. The material to build the garden, including over 500 tons of rock, were collected in China and shipped to Portland. The rocks, called Tai Hu rocks, are limestone mined from Lake Tai, a freshwater lake near Suzhou.

The entire garden is surrounded by whitewashed walls interrupted by small windows that allow passersby to peer in—only for a glimpse—a tease that draws one closer and closer to the main gate. Buildings consist of nine pavilions, unified in design, but each with unique features. They were constructed in China, unassembled for shipping, and reassembled in Portland. Carved lustrous wood, panels, and exotic rooflines reflect architecture that can only be achieved by empowering artisans in love with their cultural history. Typical of Chinese design, the pavilions are open-air style, emphasizing the belief that humans should live in harmony with nature. The roof of each pavilion is covered with bat tiles, tiles that encourage bat habitation. Bats are good luck symbols in Chinese culture. Two bats together means double good fortune. Five bats means the Five Blessings—long life, wealth, health, virtue, and a natural death. Five stylized bats are seen on the clay roof. Such symbolic detail is pervasive in this garden and may require a return trip to fully appreciate its significance.

Over 20 percent of the area of the garden is water. Reflections dominate. Plants, architecture, and art in reflective duplication create an enhanced vertical view bringing the garden into better scale with its surrounding high-rise buildings. It is an oasis surrounded by city streets.

Although the garden plot is a square, it is skillfully broken up so that only parts can be viewed at one time. Connecting walls, interrupted with a variety of moon gates, guide the visitor from one area to another. The sun enters through the moon gates focusing light on incredibly detailed hand-built stone walkways, composed largely of
**Ode to the Titan Arum**

Janet E. Aalfs

Your pleated shroud
darker than fire, rare
Giant, you are not dead,
though you have slept
so long and hard
carrion beetles mistake you
for a body light
has left. Wake-robinder, you do not
sing, but stink
like a fallen deer.
Even your blossoms
on a clumsy stalk
repel as I draw
closer. Tender
chalice in a box
by the window, cameras
clicking, voices hushed,
only the insects dare
to drink your tears
and taste your dust.

**Chinese Garden**

(Continued from page 9)

river stone which took
thousands of hours to create. The American assistants were amazed that the paving manual used by the Chinese contractors was issued in
1617, the last time it was printed! Several floral motifs were used for the walks with the transition from one to another being the inner walls within the garden.

Duality of nature, an element of Chinese philosophy, is evident in the design. While the landscape presents the Taoist view of a chaotic nature, the buildings represent the order of Confucian thought. Numerous artistic rock sculptures representing mountains are present as are enchanting water features. Poetry is inscribed on many surfaces including screens, rocks, wall plaques, and pavilions.

The plants are carefully selected, and while most were grown in Oregon (since Oregon law prohibits mature trees to be imported from abroad) they are Asian species chosen by Chinese landscape architects. So mature are the plants that there is no way you could guess that this garden is just five years old. Many trees were donated and dug up as mature specimens that were previously growing on private residences. A 100-year-old holly leaf osmanthus was donated from a resident in the neighborhood. There are over 100 types of trees, water plants, bamboo, and orchids, most of which are indigenous to southeast China. Orchids, growing in pots, are located in pavilions and on benches.

Although the garden is not large, the designers were able to include an art gallery contained within one pavilion. It displays and sells wonderful Chinese art. It was hard not to purchase the somewhat expensive art, but it was day one of our vacation and good reasoning prevailed. The garden’s teahouse allows visitors to sip authentic Chinese tea and view the garden from its highest point, the Tower of Cosmic Reflections.

For those of you familiar with Paley Park in Manhattan, this Chinese garden offers the same serene escape from the downtown noise and concrete-dominated landscape. Within the serene landscape, however, is a walk into another culture. If you do not look up into the Portland city skyline you would believe you were in thirteenth century China.

The City of Portland owns the Garden, and contracts with the Portland Classical Chinese Garden, a non-profit organization, to operate it. The garden is open all year with an admission fee of $7.00 for adults. A combination of horticulture, architecture, and art, the garden offers something for everyone. It is a must-see if you are in the Portland area—a truly unforgettable experience. Hats off to the city of Portland for another successful addition to the culture of their city.

**More on Chinese garden design:**


A list of the species in Lan Su Yuan can be found at:

[www.portlandchinesegarden.org/plants/MasterSpeciesList.php](http://www.portlandchinesegarden.org/plants/MasterSpeciesList.php)

The official website for the garden:

[www.portlandchinesegarden.org](http://www.portlandchinesegarden.org)
Lyman Conservatory was the site of the first Massachusetts flowering of the rare and remarkable titan arum, *Amorphophallus titanum*, which took place this past August. One of the most spectacular blooms in the plant kingdom, it is also one of the most malodorous. The species attracts thousands of visitors whenever it blooms. The Botanic Garden set up a live web camera so that the public could view the momentous event from far afield. Local press delighted in the blooming event and we kept the Conservatory open late into the evening for hundreds of visitor to participate in the “Titan Watch.” Public Radio aired an interview with our director which drew hurried visitors from as far as Rhode Island.

Native to the lowland rain forests of the island of Sumatra in Indonesia, this endangered species has rarely flowered in the United States. It was first discovered in Sumatra in 1878 by Italian botanist Odoardo Beccari. He sent seeds to the Royal Botanic Garden at Kew where it first bloomed in 1889. Our plant originated from seed collected by Dr. James Symon, a physician who became one of the world experts on *Amorphophallus*. He collected seed in an abandoned rubber plantation in Sumatra, and this seed was distributed to universities and botanical institutions. In March of 1995, a few seed were donated to the University of Connecticut. Clinton Morse, the UConn conservatory manager, was successful in germinating and growing the precious seed and in 2002 he generously donated a large plant to the Smith Botanic Garden, joining two smaller specimens we had acquired earlier.

The titan arum, which is in the same plant family as the New England native Jack-in-the-pulpit, produces one of the most extraordinary and largest flowering stalks in the plant kingdom. From a pleated skirt of scarlet rises a towering yellow spadix (the spike that holds all the individual male and female flowers). The flowering event is short-lived and it is not easy to predict when the flower will be fully open. Contributing to the flowers’ enigmatic and exotic allure is the release of one of the foulest odors on Earth. The overpowering aroma of rotten animal flesh attracts carrion beetles, who serve as its pollinators.

The plant’s life cycle is also interesting. Each year it forms one highly dissected umbrella-like leaf that later dies during a dry dormant phase. When the wet season returns a new larger leaf arises, and after years of this cycle the leaf can grow to 12 feet. During the vegetative stage of the plant’s life it is building up a large underground storage organ, called a corm. The size of the corm determines the inflorescence size—100 pound corms have produced flowering stalks up to 9 feet tall! A corm can eventually weigh up to 150 pounds, requiring two people to move it. Once the corm reaches a certain critical size, it may send up a flowering stalk. Ours was only about 40 pounds when it bloomed. Since others have not bloomed until achieving a greater weight, the event was unexpected.

Once we saw that it was sending up a flower stalk, we swung into action to get the word out and set up a web camera for distance viewing. The most difficult part was trying to predict exactly when it would open. Since peak flowering lasts only a day or so, Rob Nicholson studied international data on specimens that had been measured daily trying to predict the big day. But the titan surprised us again by blooming a few days earlier than the charts would predict. Luckily it did last longer than expected, much to the glee of those who appreciate the more unusual things in life.

More photos and links to other flowering events around the world are on our website: www.smith.edu/garden/Conservatory/amorphophallus.html

We had special T-shirts made up for the momentous occasion: they are black with red lettering. We still have a few left in sizes S, M, and L. Just use the order form on page 19.
The Botanic Garden is participating in an exciting, region-wide celebration of Dutch art and culture. GoDutch, taking place March through August 2006, is spearheaded by Museums10, a collaborative of western Massachusetts museums. The Botanic Garden is kicking off the entire calendar of GoDutch events with our Bulb Show opening speaker. Hans van Waardenburg of B & K Bulbs, the oldest Dutch bulb company in Holland, will be flying in for the event. B & K Bulbs sells over 200 million bulbs in the United States, and Hans van Waardenburg generously donated over 3 million daffodils to beautify New York City in memory of 9/11 victims.

More information about GoDutch can be found on the Museums10 website: www.museums10.org

As often happens, a new building’s cost eats up the landscape budget. It happened again at the new Campus School at Fort Hill. The Botanic Garden had some extra trees of species already represented on campus so we came to the rescue and donated them to the new building project. Here the children watch in amazement as a giant tree spade moves two elms in front of their new school. In total, seven new trees were given to the project including a rare Pinus bungeana or lace bark pine.

Photograph by Jamie Duncan AC

Plant Spirals: Beauty You Can Count On About was the debut exhibition in the Botanic Garden’s Church Exhibition Gallery in 2003. The exhibit was a unique collaboration between the Botanic Garden and the Math Department at Smith College, and examined spiral patterns in plants formed by the arrangements of leaves or flowers around a stem. We presented the biology of how these patterns form and introduced a mathematical model that offers an explanation for the predominance of the Fibonacci numbers in these spirals. In addition to the spirals as seen by the naked eye, a microscopic view of spirals was presented through scanning electron micrographs.

In 2004, the director of a small botanic garden in Genoa, Italy, contacted Smith College after having seen the plant spirals exhibit online. They were very taken by the exhibit and were very interested in hosting it for their annual fall science festival. We were delighted to help. Using the files that were created for our exhibition, the panels were translated into Italian and the exhibition remounted. It opened this November to great acclaim!

See the Italian science festival online at www.festivalscienza.it

Joining Museums10 for GoDutch

Plant Spirals: Beauty You Can Count On About can still be seen on our website: www.smith.edu/garden/exhibits/past-exhibitions.html
Getting Zen at the Mum Show

“\textit{It is a beautiful poem, a simple statuary, a deep philosophy, a wonderful picture, a magnificent architecture, a lovely music, a profound religion.}”

Bean Porter, on Ryoanji Temple

Among the spectacular cascading mums and the large standards (some over seven feet tall), this year’s Chrysanthemum Show included a new feature—a recreation of the Zen Garden of Ryoanji Temple in Kyoto, Japan.

There are many dry gardens of raked gravel and stone in the ancient city of Kyoto but none has become as famous worldwide as Ryoanji Temple. The grounds of the Ryoanji Temple in Kyoto have been a religious shrine for over a thousand years. The original structure was devastated in the Onin war of 1467 and the current gardens were rebuilt after the war by Hosokawa Masamoto, the son of the Prime Minister.

The very landscape of Ryoanji challenges us and seems to defy definition as a garden. A plot of land, some 90 feet by 30 feet, is enclosed on three sides by a low wall with a tile roof. A low wooden platform sits between the garden and the temple and is the only area one can view from. Within the garden, on a flat bed of raked and patterned gravel, lie fifteen stones arranged in groups of five, three, and two. The only live organisms within the garden are patches of moss which have formed around the base of the rocks. No flowering plants or conifers can be found within the walls, only the primitive mosses.

Like a three-dimensional Mona Lisa, this garden has captivated scholars, sages, historians, and mathematicians, all offering interpretations of the composition and its meaning. Does the garden evoke islands in the sea? A tigress helping her young across the river? The silhouettes of saints? Mountaintops rising through the clouds? All have been suggested.

An interesting feature of the original garden and, one we were not able to reproduce, is that from no vantage point can one see all fifteen rocks at once. It is said that only by reaching Nirvana can one float above and “see” the fifteenth stone.

Learn more about the Ryoanji Temple at www.orientalarchitecture.com/kyoto/ryoanjiindex.htm

Our Ryoanji Recreation

From various books and internet sources we were able to compile photos of the walls, rock formations, and their placement within the rectangular plot. We utilized native stone and moss collected in Franklin County. Our raked gravel was mason’s pumice from Chicopee Masonry Supplies, sifted to a particular particle size. Our plot was about one-twelfth the original size, and while our stones were spaced correctly and were chosen to mimic the original’s shape, they were proportionately bigger in our small reproduction than those in the original garden.
Designed Landscapes Moves

The Designed Landscapes exhibition was a resounding success! On view were boards submitted by twenty Smith alumnae who have pursued careers in landscape architecture and garden design.

In addition we displayed work by Alice Orme Smith ’11, lent to us by the Smith College Archives. Her distinguished career as a landscape architect included working in Beatrix Farrand’s office on plans for Dumbarton Oaks in Washington, D.C. In addition to designing many residences, Alice Orme Smith’s work included the grounds of the American Shakespeare Theatre in Stratford, Connecticut, and the grounds of the Bridgeport Museum of Art, Science and Industry. She won awards for her designs of the Garden of Religion and the Main Vista of the 1939 World’s Fair in New York City.

Although the exhibition had originally been scheduled to be on view through August 30, 2005, we extended its run so that students in the fall semester would have the opportunity to visit the exhibition. We had an excellent response, and it has been very satisfying to see the number of students visiting and closely studying the exhibition. The collected works span the last seven decades, providing evidence of Smith’s strong legacy in this arena. The projects, individually and collectively, speak to the range of landscapes and design opportunities in the profession and have been inspiring to many students.

Additionally the exhibition was enjoyed during reunion by many alumnae, who were able to see the work of their classmates.

Even though the exhibit is no longer in the Church Gallery, many alumnae donated their boards to Smith, and they are now hanging on the walls of the new Landscape Studies Program studio on Green Street.

Many thanks to the following for donating boards to Landscape Studies:
Carla Anderson-Chapman ’80
Clara Couric Batchelor ’72
Katie Brown (Kathrin Schwarzschild) ’69
Eleanor Williams Clark ’78
Susan Cohen ’62
Nancy Watkins Denig ’68
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Eunice Campbell Purdy ’39
Diantha Carrigan Robinson ’68
Shavaun Towers ’71

Another side of William Frances Ganong

When I first started working at the Botanic Garden I learned all about William Francis Ganong, Professor of Botany and the Garden’s first director (1895 to 1932). He was an innovative educator and influenced how botany was taught across the country, authoring botany texts and developing special equipment for the scientific study of plants. In fact Bausch & Lomb Optical Co. put out a catalog in 1914 called Ganong botanical apparatus for use in plant biology.

This summer, however, I discovered a another equally fascinating side of William Francis Ganong, making the man even more remarkable. I met his daughter Ann Ganong Seidler and David Folster, a Canadian who is writing a biography of William Francis Ganong. Interestingly, David Folster knew little about Ganong the professor and botanist, and he was delighted to see some of Ganong’s apparatus and learn more about the Ganong we know here at Smith. After spending some time at Smith Mr. Folster remarked to Ganong’s daughter, “Your father had to have been two men at least!”

William Francis Ganong was born in New Brunswick on February 19, 1864. In addition to his academic side, William Francis Ganong had a great love for New Brunswick and a passionate interest in its history, natural history, and native people. Furthermore he was the active director from 1918 to 1939 of Ganong Bros., Ltd, his family’s confectionery firm, a company that today is still in the family.

Ganong was a member of the Natural History Society of New Brunswick and published many works including a translation of Champlain’s Voyages to Acadia and New England. Although the native people had an intimate knowledge of the waterways and expansive forests of New Brunswick, little mapping or charting of the province had been undertaken. Ganong spent summers exploring and mapping the rivers and coastal areas as well as documenting the flora and fauna of the province. In addition to canoeing, hiking, and photographing his home province, he recorded native people’s stories and published over 150 papers and texts. Ganong kept written journals and field notes and created a photographic record of his explorations through New Brunswick.

For a virtual exhibit of his photographs, see http://website.nbm-mnb.ca/CAIN/english/william_ganong

See the exhibit online: www.smith.edu/garden/exhibits/past-exhibitions.html
The Botanic Garden of Smith College is grateful to our supporters who help make our work possible. We wish to express our sincerest thanks to the following contributors who have given so generously in the last fiscal year, from July 1, 2004, through June 30, 2005.

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The Botanic Garden is truly blessed with a wonderful group of community volunteers who give of their time and energy because they believe in the work that we do. It seems that whenever we ask for help, whether it be to lead a tour for a last-minute group, help manage the crowds during the bulb show, help set up an exhibition, fill in at the reception desk on a holiday, or put together a children’s guide to an exhibit, someone always comes through for us. How can we possibly acknowledge the enormous generosity of these dedicated people?

The volunteers certainly make my job and the jobs of all the staff much easier and they enable the Botanic Garden to accomplish so much with such a small staff. Volunteers have provided tours for about 1200 school children and adults who have visited the past year, providing a genuinely educational experience that these visitors would not have had otherwise. On weekends and holidays they greet the public at our reception desk, diligently answer questions, and direct people to what is blooming or of particular interest that day.

Many, many, many thanks to the following people:

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**You Too Can Be a Volunteer!**

If you’ve ever thought of volunteering at the Botanic Garden, now is the perfect time to contact us. We are recruiting new volunteers who are interested in leading tours through the greenhouses and gardens, staffing our reception and exhibition area, helping to develop specialized tours, providing hospitality for events such as the opening of the Spring Bulb Show, and assisting with exhibitions. (Please note that none of the volunteers do any hands-on work with plants as union regulations do not permit it.)

We have scheduled an intensive three-day training session for Wednesday, Thursday, and Friday, January 25, 26, and 27, each day from 9:00 am to 4:00 pm. The sessions are followed by weekly training tours and monthly meetings. The training includes a history of the Botanic Garden; tours of the conservatory, including commercial, medicinal, and food plants; some basic botany and horticulture; and techniques for guiding visitors and school groups. In exchange for the training, volunteers are required to volunteer at the Botanic Garden for at least one full year, including leading tours, and attending the monthly meetings.

To request an application call 413-585-2742 or email garden@smith.edu. Volunteer applications can also be downloaded from our website: [www.smith.edu/garden](http://www.smith.edu/garden)
Garden Gifts Order Form

<table>
<thead>
<tr>
<th>Item</th>
<th>Price</th>
<th>Color</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botanic Garden T-Shirts with Logo</td>
<td>$15</td>
<td></td>
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<tr>
<td>Willow Green, Slate, Eggplant, Teal, Natural, or Royal (L &amp; XL only)</td>
<td></td>
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<tr>
<td>100% Cotton, S, M, L, XL, 2XL</td>
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<tr>
<td>Titan Arum T-Shirts (see page 11)</td>
<td>$15</td>
<td></td>
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<tr>
<td>Black with red lettering</td>
<td></td>
<td>S, M</td>
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<tr>
<td>Botanic Garden Sweatshirts with Logo</td>
<td>$25</td>
<td></td>
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<tr>
<td>Teal, Maroon, or Natural</td>
<td></td>
<td>S, M, L, XL, 2XL</td>
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<tr>
<td>Botanic Garden Canvas Tote Bags with Logo</td>
<td>$10</td>
<td></td>
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<tr>
<td>Open Tote—18&quot;×19&quot;×4½&quot; Green or Navy</td>
<td></td>
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<tr>
<td>Zippered Tote—22&quot;×15&quot;×5&quot; Black or Natural</td>
<td>$15</td>
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<tr>
<td>Botanic Garden Aprons with Logo</td>
<td>$15</td>
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<tr>
<td>24&quot;×28&quot; with two pockets, Forest Green</td>
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<tr>
<td>Centennial T-Shirts</td>
<td>$15</td>
<td></td>
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<tr>
<td>“A Century of Women on Topsoil”</td>
<td></td>
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<tr>
<td>Brown or Forest Green, 100% cotton, S, M, L, XL</td>
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<tr>
<td>Botanic Print</td>
<td>$25</td>
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<tr>
<td><em>Theobroma cacao</em> (chocolate tree)</td>
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<tr>
<td>from Lyman Plant House, 7&quot; × 10&quot;</td>
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<tr>
<td>Limited signed edition by Pamela See ’73</td>
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<tr>
<td>Extra Cool Gardening Gloves</td>
<td>$7</td>
<td></td>
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<tr>
<td>Ultra lightweight nylon in S, M, L XL</td>
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<tr>
<td>Protective polyurethane coating &amp; reinforced fingertips</td>
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<tr>
<td>Botanic Garden Mugs</td>
<td>$5</td>
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<tr>
<td>White ceramic with green or black logo</td>
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<tr>
<td>Celebrating a Century:</td>
<td>$2</td>
<td></td>
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</tr>
<tr>
<td><em>The Botanic Garden of Smith College</em></td>
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<tr>
<td>Handbook on Troughs</td>
<td>$7</td>
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<tr>
<td>76 page booklet by the N. Amer. Rock Garden Soc.</td>
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<tr>
<td>Butterfly Gardening in New England</td>
<td>$5</td>
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<tr>
<td>35 page booklet by the NE Wild Flower Society</td>
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<tr>
<td>Trees: The Botanic Garden of Smith College</td>
<td>$1</td>
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<tr>
<td>Self-guided tour of significant trees on campus</td>
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<tr>
<td>Postcards – Set of 6 assorted cards</td>
<td>$3</td>
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<tr>
<td>Bulb Show, Capen Tulip Garden, Mum Show, Olmsted Campus Plan, Lyman</td>
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<tr>
<td>Conservatory in Fall</td>
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<tr>
<td>Note Cards – Set of 7 assorted cards</td>
<td>$10</td>
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<tr>
<td>Conservatory in Winter, Bulb Show, Bat Flower, Silky Stewardia Flower</td>
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<td>Frog in Pond, Broccoli ‘Romanesco,’ Japanese Tea Hut by Judy Messer</td>
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T-Shirts with Logo

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Topsoil T-Shirts

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Titan Arum T-Shirts

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Sweatshirts

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Tote Bags

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Aprons

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Gardening Gloves

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Botanic Prints

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Mugs

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Celebrating a Century

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Handbook on Troughs

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Butterfly Gardening

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Trees Brochure

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Note Card Sets

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TOTAL

| Members of the Friends of the Botanic Garden take 10% off the total |

TOTAL ENCLOSED $__________

Name:

Address:

City/State: Zip:

Email:

Please make checks payable to The Friends of the Botanic Garden and send to:

The Botanic Garden of Smith College
Lyman Plant House, Northampton, MA 01063
Attention: Garden Gifts

You can see pictures of all these items on our website:
www.smith.edu/garden/giftorderform.html
You are invited to join

The Friends of the Botanic Garden of Smith College

ALL MEMBERS RECEIVE

- A complimentary copy of Celebrating a Century: The Botanic Garden of Smith College, by C. John Burk
- Botanic Garden News, our newsletter and calendar of events, twice a year
- Admission to Members-only hours (9-10 am daily) at the Spring Bulb Show (March 4 - 19, 2006)
- Free admission and discounts at 170 other gardens around the country
- 10% discount on Botanic Garden merchandise
- Free audio tours of the Lyman Conservatory
- Invitations to show previews and receptions

☐ YES, I WANT TO BECOME A FRIEND OF THE BOTANIC GARDEN OF SMITH COLLEGE!

Enclosed is my check to The Friends of the Botanic Garden of Smith College in the amount of $__________.
All contributions are tax-deductible. Send to: Friends of the Botanic Garden of Smith College, Northampton, MA 01063.

You may also join the Friends or renew your membership online using a credit card at http://www.smith.edu/friends