



THE BOTANIC GARDEN
OF SMITH COLLEGE

Botanic Garden News

FALL 2007

Pompeii and Lithography Meet at the Botanic Garden

Madeline Zadik

What do the two courses *Studio Art 269 – Offset Printmaking* and *Art History 285 – Great Cities: Pompeii* have in common and why are we mentioning them in the Botanic Garden newsletter?

Professors Dwight Pogue and Barbara Kellum are the first two faculty members to participate in our new Curricular Enhancement Program. They have reworked their courses to focus on the Botanic Garden and engage students with our plant collections in some very interesting ways.

Gaining inspiration from Piet Mondrian's rendition of the Chrysanthemum, lithography students are focusing their efforts this semester on chrysanthemums as seen in the Lyman Conservatory. They have been watching the development of the mums in the greenhouse as they are being grown and trained for the November show. We presented them with a new perspective on mum flowers with a class session on mum flower anatomy, giving them the opportunity to use dissecting microscopes and get up close with all the flower parts. The class is also participating in the annual chrysanthemum hybridizing. While they are learning all about lithography techniques, the students will be producing a series of prints, culminating in an exhibition to be displayed along the wall by the Lyman offices in January and February.



Dissecting chrysanthemums from left:
Alicia DePaolo '10, Corey Eilhardt '09, Ava Chung '10



Monoprint plate by Rebecca E. Jablon '10

there will be an exhibition of illustrations from *A Pompeian Herbal* by Wilhelmina Feemster Jashemski the first week of December, and one of the illustrators, Victoria I, will be speaking to the class. See our calendar of events on page 10.

Plans are already underway to collaborate on two new and exciting courses for next semester — an ecohydrology course in the Engineering Department and an English course on the King James Bible and its literary heritage.

We are delighted with how well the program has been received, and the great interest on the part of the faculty.

Funding is provided by the Louise de Bevers Spetnagel Endowment Fund. ☪

For more information see:

[www.smith.edu/garden/Academics/
curricularenhancement.html](http://www.smith.edu/garden/Academics/curricularenhancement.html)



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www.smith.edu/garden/Newsletter

Student Profile: Amanda Anderson '09

Madelaine Zadik



Amanda Marie Anderson '09 applied for her first job in 2003, with the Smith Summer Employment Program. We have been extremely lucky to have Amanda working with the Botanic Garden ever since. She must like it as she keeps coming back. Her exceptional computer skills have been put to great use on everything from our web site to maintaining our Friends database. After five summers, Amanda has quite a good grasp of how things operate here, and she has been a tremendous help in keeping the place operating smoothly.

Amanda has seen many changes at the Botanic Garden since her first day of work. She arrived just after the Lyman Conservatory renovation, when Maryjane Beach and Diane Bowman worked in the office. Amanda saw them leave and Sheri Lyn Peabody arrive. She saw the departures of Bill Belden and Sue Shaffner, and the arrival of Elaine Chittenden to replace Tracy Omar as Manager of Living Collections.

When she started at the Botanic Garden, Amanda was a somewhat shy junior high school student, but over the years at our reception desk she has developed into a more outgoing person. She's had to deal with many demanding visitors, and Amanda says that she has also learned to be more patient. People have assumed that she was an expert who could identify many plants and plant diseases. She laughs about the people who ask whether they could take plants from the greenhouse or if they could cut branches off a tree. She can now tell you where to find many of the plants in our collection, including her favorite, the sensitive plant, *Mimosa pudica*. A memorable moment for her were the "tons of visitors" when the notoriously stinky Titan Arum bloomed in 2005.

Amanda is a third generation Smithie, her mother and grandmother both having graduated from Smith, and both her parents currently work at Smith. Amanda also attended Smith Daycare and the Campus School, so she knew her way around the campus even before working here. She entered Smith as a STRIDE student, which enabled her to do research with faculty in biochemistry and psychology. Amanda is now in her junior year at Smith, a psychology–neuroscience double major. Although she'd love to work for us during the academic year, her class schedule makes that impossible. She still occasionally fills in for us when we're short-handed. For the moment she's leaving her options open for the future — she's thinking about medical school, nursing school, or graduate school.

When asked what she likes best about working at the Botanic Garden, without hesitation she cites the beautiful location, seeing kids get all excited when they come for a visit, having great bosses, and how Steve and Nate keep her entertained when things get slow. Next summer Amanda won't be back, however, as she's planning on an internship in Boston at Harvard, working on stem cell research or in one of the hospitals, helping people in the emergency room. She's a little nervous as she's only ever worked at Smith. We know that she is more than capable and will do well at whatever she chooses. We wish her the best, but we'll also miss her! ☺

Summer Internship Growing Strong

Gaby Immerman



Photograph by Michael Dosmann

At the Arnold Arboretum with a huge *Acer griseum* (paperbark maple), left to right: Alex Julius, Gaby Immerman, Janice Wilson, Michael Marcotrigiano, Lesley Joplin, Rachel Rock-Blake, Mai Frank, Corey Eilhardt, Deborah Villamia, Deh Koon Lim, and John Berryhill.

It was another lively, productive summer at the Botanic Garden, with the Summer Internship program doubling in size in only its second year. Ten talented and committed students (eight from Smith, one from Hampshire College, and one from UMass) devoted their energy and enthusiasm to assisting in the care of our 125-acre campus landscape. Such a large, competent crew allowed for improvements such as new groundcover installations, protective mulch rings around trees, and other important plantings.

Beyond the obvious benefit to the campus, the program is a tremendous learning experience for the students. Students learn about plant materials and how the Botanic Garden operates, everything from methods for planting and pruning to how we record information in our plant database. Summer interns design and implement independent projects, providing them with an opportunity to explore their own areas of interest in depth while at the same time benefiting the Botanic Garden in unique and important ways.

This summer's projects ran the gamut, from production of a promotional video for the Botanic Garden (Dawna Sirard AC) to mapping existing groundcover plantings and identifying sites for future installations (Corey Eilhardt '09). Other projects included the creation of a brochure for the newly renovated Capen Garden (Janice Wilson AC), continuation of the Tree Health Survey begun in 2006 (Alex Julius '09), a Collections Review of the Warm Temperate House (Deh Koon Lim, UMass '07J), and production of a self-guided tour of the Botanic Garden for children and parents (Lesley Joplin '09). Mai Frank (Hampshire '08) worked with Botanic Garden staff to plan and develop a proposed permaculture forest garden to be located on the Hampshire College campus. Rachel Rock-Blake '09 pursued ongoing study and propagation of African violets (*Saintpaulia ionantha*) in tissue culture, working with Michael Marcotrigiano to unravel the causes of leaf variegation, while Deborah Villamia AC '08J worked with Michael and Special Projects Coordinator Polly Ryan-Lane to develop educational materials for the soon-to-be-installed Woods of the World exhibit in Lyman Plant House.

Now in her third year working with the Botanic Garden, Rachael Cain '08 put a second year of effort into her Summer 2006 project of identifying and removing invasive species on campus (see *Botanic Garden News* Fall 2006, page 11). The campus has now been completely checked over for the presence of any invasive plants, many small populations have been eradicated, and the Botanic Garden hopes to hire an outside contractor to complete another round of large-scale removals, including any remaining *Euonymus alatus*, burning bush.

The Summer Internship seeks to introduce students to the full range and scope of public gardens, and this summer's crew was able to take advantage of the many local institutions through a series of field trips. New adventures this year included visits to three Massachusetts treasures: Harvard's Arnold Arboretum, Garden in the Woods (New England Wild Flower Society), and Tower Hill Botanical Garden in Boylston, MA. We were also grateful to have the chance to visit Betsy Anderson '04, Garden Historian at The Mount, Edith Wharton's magnificent home and restored gardens in Lenox, MA. Betsy took time out from her last week at the Mount to provide a personal tour of the house and grounds (Betsy is currently in the United Kingdom on a Landscape History Fellowship with Britain's National Trust, sponsored by the Royal Oak Foundation). The interns then spent the afternoon working under Betsy's direction to remove invasives and other competitors from naturalized woodland beds immediately surrounding the formal gardens.

Good hard work, 100 yards of bark mulch, a few swimming holes, and countless popsicles later... overall it was a very successful second year for this vital new Botanic Garden program, and we have already fielded numerous inquiries from students interested in interning with us next year. This program is clearly of measurable benefit to students, the Botanic Garden, and the College as a whole, and we look forward to its continuing development in the years ahead. ☺

More information for students interested in applying:
www.smith.edu/garden/Academics/students.html

Information on supporting internship opportunities:
www.smith.edu/garden/Giving/studentinternships.html

Mourning, Healing, Enduring: *Cupressus sempervirens*

Erin Whelchel '09

The yellow-white sunlight filtered and glinted through its delicate, feather-like upper branches, each curving out of the trunk to shoot directly upward as if it was trying to reach beyond the glass ceiling and right into the clouds above. It was a light but towering giant, like a circus man on stilts, standing approximately twelve feet tall on a trunk base whose diameter measured less than three inches. I was taken by its gentleness, vertical lines and height. I had encountered the noble cypress [in the Lyman Conservatory].



Photograph by Erin Whelchel '09

Mid-May-grass green, its evergreen leaves are reminiscent of snowflake formations, each emerging from an interior mature branch or an exterior flexible shoot at a 45 degree angle, each subsequent piece producing its own leaves at the same angle. The leaves look prickly, like the layered and spiny leaves of an artichoke, but they are flexible. New growth is emerging on the very exterior layers of the plant: limey green shoots sprouting from brick red sheaths.

An interesting story surrounds this plant's mythical beginnings. Ovid recounts the story of a boy named Cyparissus who loved a noble, sacred stag but accidentally killed it with a javelin.¹ Cyparissus was overcome with grief and "his life forces were exhausted by endless weeping."² Because of his continual mourning, his limbs turned green, his hair became a "bristling crest," and he was transformed into "a stiff tree with a slender top looking to the starry heavens."³ Phoebus, a god who loved Cyparissus very much and had urged him to mourn with greater "moderation," told his newly arboreal friend, "You shall be mourned by me, shall mourn for others, and your place shall always be where others grieve."⁴ This is

why, Pliny explains in his own work, the cypress is always "placed at the doors of houses as a sign of mourning."⁵

Aside from its use in the ceremony of mourning, it was not uncommon to find cypresses in the garden. Pliny explains that this native of Crete was an ornamental tree; it did not even provide a great deal of shade.⁶ Looking up at this narrow, lacey tree—what Ovid once described as the "cone-shaped cypress"—I can see that this is plausible.⁷ Because of the plethora of flexible shoots, Pliny goes on to explain that many people of his day began to shape their cypresses into "thick walls" or statue-like designs: "hunting scenes" and "fleets of ships" to name a few.⁸ They were not easy to grow, but each twelve-year-old cypress could be sold for a denarius.⁹ Cypress farms were called "a dowry for a daughter" because of this large profit.¹⁰

In ancient times, cypress leaves were used for a wide variety of medicinal treatments. Pliny explains that they were bitter tasting, but that they were often pounded and applied to the body to treat wounds.¹¹ When mixed with pearl barley, the leaf mash was smoothed onto the head to treat sunstroke; when combined with pounded roots and drunk, it became an antidote for spider venom.¹² Unpounded leaves created a whole slew of household and medicinal compounds when combined with liquids or other substances: with vinegar, they made a dye; with wax, an anti-inflammatory for testicles; with meal, a treatment for tumors.¹³

The mottled, marbled, mauve-brown trunk is streaked at inch-long intervals with red stress marks from its growth. It is straight and cylindrical; the stronger branches jutting out from it contort and twist to face the sky. Although Pliny cautions us that cypress provides "scanty" timber—and with such a narrow trunk, this is evident—it is also known to be a very durable wood.¹⁴ Along with cedar, cultivated olive, and box, cypress wood does not "split or crack," nor does it "decay and age."¹⁵ In addition, cypress was referred to as the only wood which "retains its polish in the best condition for all time;" this is why it was used to build the wooden "folding doors" in the temple of Diana at Ephesus.¹⁶ Cypress wood has been known to last hundreds of years, a prime example being the carved statue of Vejovis, which had survived over two hundred years by Pliny's time.¹⁷



Photograph by Jesse Van Hoy

Italian cypresses in Pompeii



Photograph by Erin Whelchel '09

The cypress in the Cool Temperate House is *Cupressus sempervirens* var. *dupreziana*, the Saharan cypress, an endangered plant from Algeria.

As I exit the Cool Temperate House, I look back one last time at the cypress: so valuable and giving to the ancient Romans, so tall and

(Continued on page 5)

Ants in My Plants

Rob Nicholson

Food, clothing, and shelter are basic needs that the world of plants provides to humans from thousands of different species. But what of creatures other than man? Does the plant kingdom provide for them in similar fashion? I could think of no animal that adorns or protects itself with plant material as we do with fibers of flax or cotton, or even skirts of grass. But housing is another matter. A multitude of bird species build nests of plant material as do many arboreal mammals. Our local beavers decimate streamside forests for construction timbers, and a few insects are known to bend leaves to create a safe haven.

A remarkable group of ferns provides one of the more stunning examples of mutualism, a relationship where both parties derive some benefit. In the forests of tropical southeast Asia and Malaysia can be found a small cluster of 13 fern species that have come to be known as ant ferns. They exhibit what the ecological community terms myrmecophilia, taken from the Greek *myrmex* (ant) and *phileo* (to love), as these species provide habitat for ants by way of swollen and chambered stem parts.

Most ant ferns have rhizomatous stems that have evolved to have not just hollow chambers inside, but openings that allow entry. Ants readily colonize these chlorophytic condos and it has been shown, by use of radioactive tracers, that the ant's droppings get absorbed by the fern, a supplemental nutrient. It would seem that this landlord/tenant relationship is unusual, as the more and messier the tenants are, the better for the landlord.

The variety of the textures and colors of the rhizomes of this small group of epiphytic ferns, *Lecanopteris*, is striking. *Lecanopteris mirabilis* has a broad, flattened green rhizome which, though not hollow, shelters the ants beneath. Some such as *L. crustacea* and *L. sinuosa* are covered in scales, looking as if clad in miniature flakes of oatmeal, while my favorites *L. curtisii* and *L. luzonensis* have matte blue-green waxy and waxy black rhizomes, respectively. Whether grown in a basket or mounted on a board, a well-grown specimen plant is a striking piece of living sculpture, rendered even more dramatic by rarity, as few people have ever seen or heard of them.

Although these ferns have been in the botanical literature since 1825 when Caspar Reinwardt (1773–1854) first detailed their existence, their appearance in general cultivation has only happened recently, with information about them and their spread being fueled greatly by the internet. ☞

Cypress continued

(Continued from page 4)

green, still winking at me through the light: a gentle giant. I think of poor Cyparissus and can almost imagine the sound of a gentle sighing through the soft tips of the plant, as it flutters in the moist warmth of the greenhouse and strives to reach its beloved lost in the skies above. And I think of what a sincere and significant gesture it was for the ancient Romans to use the wood that they thought would last forever to represent their grief at the loss of a loved one. ☞

¹ Ovid 73, bk.10, ll.120–125

² Ovid 73, bk.10, ll.135–136

³ Ovid 75, bk.10, ll.137–140

⁴ Ovid 73, bk.10, l.132; 75, bk.10, ll.141–143

⁵ Pliny 4: 479, bk.16, l.139

⁶ Pliny 4: 481, bk.16, l.142; 479, bk.16, l.139

⁷ Ovid 71, bk.10, l.106

⁸ Pliny 4: 479–481, bk.16, l.140

⁹ Pliny 4: 481, bk.16, l.141

¹⁰ Pliny 4: 481, bk.16, l.141

¹¹ Pliny 4: 479, bk.16, l.139;

7: 13–15, bk.24, l.15

¹² Pliny 7: 13–15, bk.24, ll.15–16

¹³ Pliny 7: 13–15, bk.24, l.15

¹⁴ Pliny 4: 479, bk.16, l.139

¹⁵ Pliny 4: 525, bk.16, l.212

¹⁶ Pliny 4: 527, bk.16, ll.214–216

¹⁷ Pliny 4: 527, bk.16, l.216



Lecanopteris crustacea in the Fern House

Photograph by Madelaine Zadik

Individuals who are fascinated by ant plants and have put together excellent websites on them include:

Nicholas Plummer has supplied material to many botanic gardens, including the Smith Botanic Garden —

<http://home.nc.rr.com/myrmecophyte/fern.html>

Charles Alford's small nursery is online. He specializes in some of the rarest ferns in cultivation and his website also has a high number of photos, giving wonderful examples of how spectacular these ferns can be —

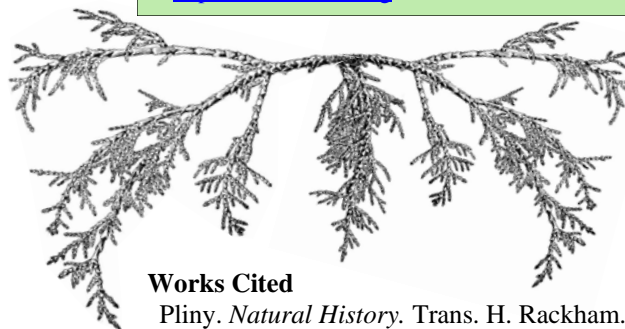
http://www.rareferns.com/ant_ferns.htm

Dr. Andreas Wistuba and Hermann Wistuba of Germany are avid and adventurous collectors of carnivorous plants, but also have a subsection of their website for ant plants and a fine photographic gallery. They also sell plants and many of the rarest carnivores have probably come to the USA through their efforts —

<http://www.wistuba.com>

For a serious botanical analysis of ant fern taxonomy see *Systematics of the Ant-Fern Genus Lecanopteris (Polypodiaceae)* by Christopher Haufler et al., available at BioOne —

<http://www.bioone.org>



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Ovid. *Metamorphoses*. Trans. Frank Justus Miller. Rev. G. P. Goold. Rev. ed. Loeb Classical Library 43. Book 10. Cambridge: Harvard University Press, 1994.

Going Ballistic – Autumn Seed Dispersal

Michael Marcotrigiano

On a lovely late autumn day I strolled along the path near Paradise Pond with Laurie Sanders '88. Laurie, a naturalist, produces radio programs on WFCR, our local National Public Radio station. Her piece, *Field Notes*, features accessible explanations of the natural world. Laurie contacted me saying she was interested in doing a piece on seed dispersal mechanisms. Since the Smith landscape contains so many kinds of plants, we did not have to walk too far to find examples of many types of seed dispersal.

Unlike animals, whose offspring use legs, wings, or fins to travel great distances from their parents, plants must have other methods to get into new locales. Although seed falling right near the parent is common, it may not have the best outcome. Seedlings would need to compete with the mother plant for light and may fail to thrive if they were shaded too heavily. If they did survive they would compete for water and soil nutrients with the parent plant, which already has a more extensive root system. Later in life they might inbreed if their only nearby source of pollen was the plant from which they arose. Therefore, for a young plant, it is much better to “leave the nest” and find a space all to itself. How to do that?

The methods that have evolved to disperse seed are as diverse as the plants that bear them. In general, scientists break down dispersal mechanisms into biotic (using another form of life to spread the seed) or abiotic (using natural nonliving forces to spread the seed).

Biotic means are more commonly recognized by humans, since we benefit from some of the ways plants “package” their seeds. From an energy standpoint sweet fruit do little to help a plant. In fact, their development drains food resources from the plant. However, when the colorful



Acorns from oaks, *Quercus* spp., attract mammals with their nutty odor.

fruits attract animals and are eaten, the seeds get dispersed. Typically, the seeds are ingested by birds or mammals and the seed passes through the digestive system unharmed, being deposited some distance away from the parent plant, e.g., raspberry. In the cases where flesh surrounds the seed, e.g., avocado, the fruit is carried away, the flesh is eaten and the seed left behind. Many plant families have adapted this method of seed dispersal.

Seed without colorful or sweet flesh surrounding it can still be attractive to animals. Nuts attract mostly mammals that can smell them and it is the seed itself, rather than the surrounding fruit, that the animals are seeking for food. Oftentimes they are stored for later use and forgotten. Mammals like squirrels may bury them, while certain birds push them into the crevices of tree trunks.

Lest you think it is only birds and mammals that disperse seed, think twice. Some of the more primitive plants of the Amazon have their seed dispersed by fish like the tambaqui, which have teeth and jaws strong enough to crush fairly large seed. Their actions often assist in fruit drop as they lunge at hanging branches to get them. Some fruit escape and are relocated downstream. While you may be surprised about seed dispersal by fish, there are even lower forms of life that move seed around.

Some plant species, e.g., bloodroot, have seed with elaiosomes, attached fleshy structures rich in fat and protein that are very attractive to ants. The term myrmecochory refers to seed dispersal by ants. Ants carry the seeds one by one into their tunnels but eat only the elaiosomes. The undamaged seed can germinate in a location far away from the parent plant.

The previous biotic dispersal mechanisms benefit the disperser. However, one biotic mechanism, called attachment benefits only the plant. Seeds or fruit with some kind of hooking or sticking mechanism are able to attach to animal fur or feathers. The plants are usually low growing, increasing the probability that passing animals will pick up their seed. The attached fruit or seed eventually falls off or becomes so annoying the animal removes it by scratching or biting.

Not all plants are dependent on other forms of life to disperse their seed. Any child can tell you about the dandelion and its little parachutes that enable its seeds to be airborne. The interesting thing about wind dispersal is that there



Purple berries of pokeweed, *Phytolacca americana*, attract birds, who eat them and pass the seed a distance away.



Burdock, *Arctium lappa*, with its prickly fruit that hooks onto animal fur. The seeds are dispersed from the fruit as the animals move around. In the 1940s a Swiss inventor, George de Mestral, studied the hooking mechanism and “invented” Velcro by copying from nature.

To learn more,
listen to the September 24, 2007
Field Notes audio piece:
www.smith.edu/garden/seed-dispersal-audio.html



Milkweed, *Asclepias syriaca*, follicles (dry dehiscent fruit) crack open and a multitude of seed are ready for a flight to a yet unknown location.

Seed Dispersal *continued*

(Continued from page 6)
are so many types of aeronautical structures that have evolved. Plumed seed like dandelion and milkweed have light feathery appendages that can carry seed in the slightest breeze. This adaptation is highly effective in windy areas such as open fields. But if the seed is much heavier this mechanism may not be

effective. Maples and ashes, for example, have heavier seed and have adapted a helicopter method rather than a parachute! Their seed drops from greater heights and spirals down and away.

Floating and drifting in water is another less common mode of abiotic seed dispersal. This can occur with some of the smaller floating seeds that exist near freshwater streams. But other species that use the ocean currents can tolerate salt water for long periods of time. The most common example of a drifting fruit is the coconut. The seed can remain viable in salt water where it can travel a few thousand miles, land on shore, and populate a new island.



Pairs of samaras (single-seeded indehiscent fruit) of the paperbark maple, *Acer griseum*.

Probably the least common and most unknown abiotic method of seed dispersal is the ballistic method. This method is dependent on a potential force building up during seed capsule development. In some plants, like witchhazel, *Hamamelis* spp., the process can take a full year. Once the capsule dries, it reaches the point where the internal forces are great enough to split it open and eject the seed at high velocity.

The wild impatiens is also called touch-me-not because if you touch the seed capsule at maturity it explodes. Most plants that use ballistic seed dispersal can be traced back to a time when there were no animals on Earth. Nevertheless, the method has persisted in more than one plant family.



Touch-me-not or jewelweed, *Impatiens capensis*, in bloom. When the seed capsule (below the flower on the left) was lightly touched it exploded (see right), releasing its seed. The exploded capsule is curled back after the stresses that caused it to split are relieved.

The marvelous array of seed dispersal mechanisms in plants shows how plants have adapted to their surroundings. Maintaining the diversity of life on Earth is so important when one considers how dependent organisms are on each other. The next time you eat a peach while walking in the woods and throw the pit into a glen, don't just think about how tasty the peach was, think about how you've become "tricked" into being one of the vectors for seed dispersal!

Garden Goes Wild

This has been a good year for wildlife in the Botanic Garden. We have had several interesting visitors in the Systematics Garden. You just never know what to expect when you are strolling along.



Barred owl, Photograph by Dick Fish



Giant snapping turtle (18" long shell)
Photograph by Sheri Lyn Peabody



Red-tailed hawk checking out the pond
Photograph by Madelaine Zadik

Plant Carnivory: Fact and Fiction

Elisabeth Wolfe '10

Over millions of years of evolution, plants have become adapted to difficult environments in ways that oftentimes are awe-inspiring or seem unbelievable to us. Plants with the means to capture, kill, digest, and absorb animals are one such example. However, put in perspective ecologically, these carnivorous plants simply reflect the end product of natural selection in soils deficient in nutrients.

Carnivorous plants are most often found in ecosystems that are highly acidic, alkaline, or wet. Extremes of acidity or alkalinity tie up nutrients, making them less available to plants. In acidic bogs conditions are also ideal for the leaching out of essential minerals, and a slow decomposition rate means that the sparse nutrients are replaced very slowly. Nitrogen is one such element that is lacking in the soils where carnivorous plants grow. Plants that developed the alternative method of obtaining nutrients through the capture and absorption of nutrients from animals were successful in obtaining more nitrogen as well as other nutrients. Consequently, under these conditions, carnivorous plants gained an advantage over the noncarnivores, surviving better and producing more offspring.¹

One of the most famous species of plants that has adapted to be able to absorb minerals in this fashion is *Nepenthes rajah*. Native to Borneo, this pitcher plant is only found on Mount Kinabalu and neighboring Mount Tambuyukon in Sabah, Malaysia. Charles Clarke, an Australian botanist and taxonomist who observed the plant in the wild, reported, "*Nepenthes rajah* grows in open, grassy vegetation in sites which are permanently moist.... The pitchers rest on the ground and are often reclined, leaning against surrounding objects for support.... The pitchers are usually dark purple in colour while the peristome [the lip of the pitcher] ranges from red to purple."² The reason for this species' fame however, is that its pitchers (which are modified leaf tips) are the largest of all pitcher plants, known to be over a foot long and to hold over four quarts of digestive liquid.³ Not only does *N. rajah* catch insects, lizards, and frogs, but it is the only species of carnivorous plant that has been documented



Giant pitcher of *Nepenthes rajah*.
Mount Kinabalu, Sabah, Borneo.

to catch small mammals such as rodents.⁴

The Botanic Garden of Smith College has recently acquired a young *Nepenthes rajah* donated by Ray DeMeo of Florence, Massachusetts. It joined other species of *Nepenthes* in the Stove House and now hangs over the pool populated by goldfish and koi. It is a difficult species to grow as it is native to the high altitude tropics where moist, balmy conditions prevail. Ironically the New England summer heat is what usually kills these hungry beauties in conservatories.

Unique plants inspire humans to push the line between fantasy and reality. The two documented cases of rodent capture and digestion by *Nepenthes rajah* are the only known cases of a plant species "eating" mammals, a pretty far cry from man-eating. However, knowing that there is a plant capable of capturing, killing, digesting, and absorbing small mammals, it doesn't seem too large a leap of the imagination to conceive of a

plant that could capture and kill large mammals, such as humans. There exists one such myth on the island of Madagascar, specifically a myth of a man-eating tree.

Since several genera of carnivorous plants, *Drosera*, *Utricularia*, *Nepenthes*, and *Genlisea* can be found in Madagascar, one can guess that the myth could have been inspired by this group of plants.⁵ Unfortunately, no connection has ever been made between species of carnivorous plants and the Malagasy myth. There is, however, an interesting story for those intrigued by ethnobotany. In 1881 in the *South Australian Register* an account appeared by Dr. Carl Liche, who traveled to Madagascar and apparently witnessed the members of the Mkodo tribe offering a woman in sacrifice to the man-eating tree:

*The slender delicate palpi, with the fury of starved serpents, quivered a moment over her head, then as if instinct with demoniac intelligence fastened upon her in sudden coils round and round her neck and arms; then while her awful screams and yet more awful laughter rose wildly to be instantly strangled down again into a gurgling moan, the tendrils one after another, like great green serpents, with brutal energy and infernal rapidity, rose, retracted themselves, and wrapped her about in fold after fold, ever tightening with cruel swiftness and savage tenacity of anacondas fastening upon their prey.*⁶

However, this man-eating tree has never been found and the Mkodo tribe seems to have disappeared as well.

When photojournalist, author, and more recent traveler to Madagascar Mark Eveleigh asked about this myth, a Malagasy man denied the existence of such a man-eating tree but did confirm the existence of an "Agy Tree."



Depiction of a native being consumed by a Ya-te-veo ("I can see you") carnivorous tree of Central America. From *Sea and Land*, by J.W. Buel, 1887.

(Continued on page 9)

New Library Additions

Using the Mina K. Curtis and Margaret D. Smock Funds, which are earmarked specifically for book purchases, we continually strive to improve the botanical holds at the Smith College and Botanic Garden Libraries. Some books we have recently added include these:

- Ainsworth, Charles, Ed.. 2006. *Flowering and Its Manipulation, Annual Plant Reviews, Volume 20*. Ames, IA: Blackwell Publishing Ltd.
- Bradford, Kent & Nonogaki, Hiroyuki, Eds. 2007. *Seed Development, Dormancy and Germination, Annual Plant Reviews, Volume 27*. Ames, IA: Blackwell Publishing Ltd.
- Brickell, Christopher, Ed. 2004. *International Code of Nomenclature for Cultivated Plants, Seventh Edition: Proceedings of the Meetings of the IUBS Commission for the Nomenclature of Cultivated Plants*. Leuven, Belgium: International Society for Horticultural Science.
- Gan, Susheng, Ed. 2007. *Senescence Processes in Plants (Annual Plant Reviews, Volume 26)*. Ames, IA: Blackwell Publishing Ltd.
- Gregory, Peter. 2006. *Plant Roots: Growth, Function and Interactions with Soils*. Ames, IA: Blackwell Publishing Ltd.
- Hall, Anthony & McWatters, Harriet, Eds. 2005. *Endogenous Plant Rhythms, Annual Plant Reviews, Volume 21*. Ames, IA: Blackwell Publishing Ltd.
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- Ingram, David, Vince Prue, Daphne & Gregory, Peter, Eds. 2002. *Science and the Garden: The Scientific Basis of Horticultural Practice*. Ames, IA: Blackwell Publishing Ltd.
- Jenkins, Virginia Scott. 1994. *The Lawn: A History of an American Obsession*. Washington, D.C.: Smithsonian Institution Press.
- Kellert, Stephen. 2005. *Building for Life: Designing and Understand the Human-Nature Connection*. Washington, D.C.: Island Press.
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- Poppy, Guy M. & Wilkinson, Michael J., Eds. 2005. *Gene Flow from GM Plants*. Ames, IA: Blackwell Publishing Ltd.
- Simonds, John Ormsbee. 2006. *Landscape Architecture: A Manual of Environmental Planning and Design*. Columbus, OH: McGraw-Hill Professional.
- Steinberg, Ted. 2007. *American Green: The Obsessive Quest for the Perfect Lawn*. New York, NY: W. W. Norton & Company.
- Stoecklein, Marc. 2001. *The Complete Plant Selection Guide for Landscape Design*. West Lafayette, IN: Purdue University Press.
- Teyssot, Georges, Ed. 1999. *The American Lawn*. New York, NY: Princeton Architectural Press. ☞

Carnivory cont'd

(Continued from page 8)

Eveleigh described the Agy Tree's pods, whose hairs detach upon the mildest breeze and descend upon its unsuspecting prey, resulting in a pain ten times worse than the common nettle.⁷ It turns out that this "Agy Tree" is in truth a vine of the genus *Mucuna*, which grows on trees in Madagascar.⁸

If the species found near this Mkodo tribe of Madagascar is *M. pruriens*, several chemical compounds found within this species could help to explain the presence of the man-eating tree myth. Mucunain and serotonin are found within the hairs of the pods, which cause itching, blisters, and dermatitis. These compounds are strong enough to be used as an anthelmintic (a drug that expels parasitic worms from the body through stunning or killing them⁹) and are rumored to be used to kill enemies in Africa by placing the pod hairs in the food of the victim.¹⁰

A third compound found within the seeds in the pods of *M. pruriens* is L-dopa, known to have potent effects on the brain and to produce hallucinations.¹¹ It can therefore be easily understood why the combination of the variety of awe-inspiring species found on the island of Madagascar and the compounds found within this particular species could result in folklore of giant man-eating tree proportions. ☞

¹Schnell, Donald E. 1976. *Carnivorous Plants of the United States and Canada*. John F. Blair, Winston-Salem, NC. pp.1-4.

²Clarke, Charles. 2001. *A Guide to the Pitcher Plants of Sabah*. Natural History Publications (Borneo), Kota Kinabalu, pp. 26-29.

³Peter D'Amato. 1998. *The Savage Garden*. Ten Speed Press, Berkeley, California, p. 270.

⁴Clarke, Charles. 1997. *Nepenthes of Borneo*. Natural History Publications (Borneo), Kota Kinabalu, p. 123.

⁵See http://www.honda-e.com/A02_World%20Maps/WorldMap_Genlisea.htm

⁶See <http://www.pbs.org/wgbh/nova/madagascar/surviving/frights2.html>

⁷See <http://www.travelafricamag.com/content/view/537/56/>

⁸See <http://www.pbs.org/wgbh/nova/madagascar/surviving/frights.html> and <http://firaketana.org/bins/teny2?ol=mg.en.fr.www.lt&sid=agy@mg.n>

⁹See <http://www.hort.purdue.edu/newcrop>

¹⁰See <http://en.wikipedia.org>

¹¹Szabo, N.J and I.R. Tebbet. 2000. *The Chemistry and Toxicity of Mucuna Species*. Analytical Toxicology Core Laboratory, Center for Environmental and Human Toxicology, University of Florida, Gainesville.



Calendar of Events — Fall 2007

All events are free unless noted otherwise (donations always appreciated!)

LYMAN CONSERVATORY FALL CHRYSANTHEMUM SHOW

Saturday November 3 – Sunday November 18, 2007

10:00 am – 4:00 pm

Oversized blooms reaching 8 inches across appear atop plants 5–7 feet tall. The stunning showcase includes chrysanthemums grown in the traditional Japanese style, painstakingly trained to cascade downward and form a “waterfall of flowers” gushing down the greenhouse wall. Since the early 1900s Smith horticulture students have been trying their hands at hybridizing, experimenting with the wide assortment in color and form of mum flowers. Results are showcased again this year. The show has also gone high-tech — a live-feed web camera broadcasts the Mum Show online to viewers around the world.

See the show at www.smith.edu/garden/Home/web_cam.html.



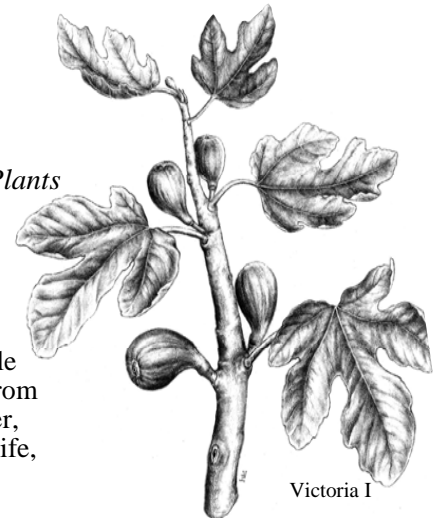
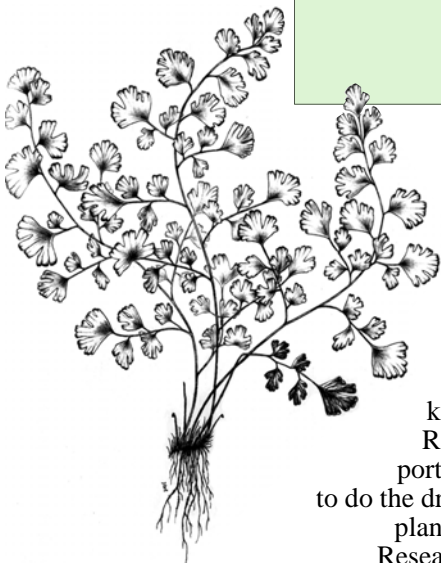
EXHIBITION ~ POMPEIAN GARDENS: ILLUSTRATIONS FROM *A POMPEIAN HERBAL*

December 1 – 7, 2007

Jannotta Gallery, Hillyer Hall

Thirty-six plant portraits by Victoria I and Lillian Nicholson Meyer, created for *A Pompeian Herbal, Ancient and Modern Medicinal Plants* by Wilhelmina Feemster Jashemski.

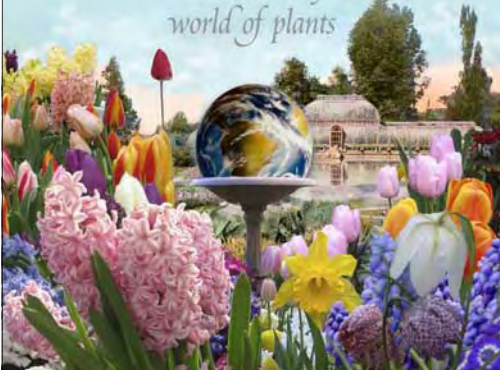
Victoria I has been collaborating in the field of ancient Roman art for over 12 years. Wilhelmina Jashemski, known for her groundbreaking work on excavating ancient Roman gardens, persuaded Victoria I to undertake the plant portraits. Although not trained as a botanical artist, she was able to do the drawings by working from photos of the Pompeii area and from plant specimens and drawings provided by Dr. Frederick Meyer, Research Botanist at the U.S. National Arboretum, and whose wife, Lillian, drew the other portraits in the book.



Victoria I

THE WORLD IN A GARDEN

Gardens everywhere can be viewed
as “microcosms of the
world of plants”



EXHIBITION THE WORLD IN A GARDEN

Through December 21, 2007

Church Exhibition Gallery, Lyman Plant House

This exhibit investigates ways that botanic gardens since the early Renaissance have endeavored to represent our increasing awareness of the plant life of other continents and climatic regions. Select images, including many from the rich collection of botanical works in the Mortimer Rare Book Room, showcase how botanists and botanical artists have sought to describe and illustrate the diversity of the known plant world in an age of constant exploration and discovery.

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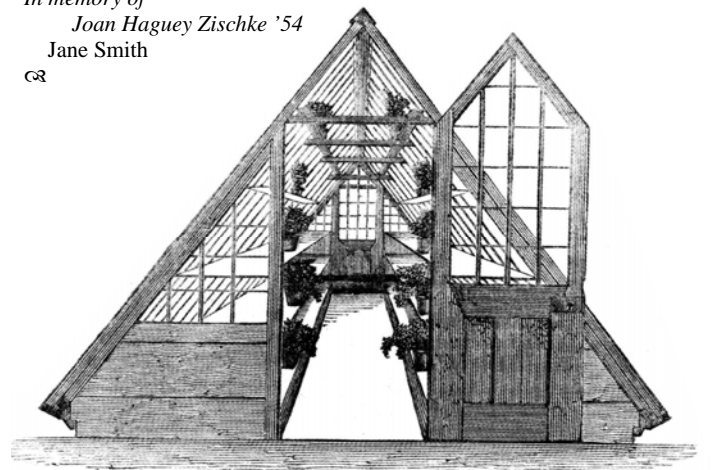
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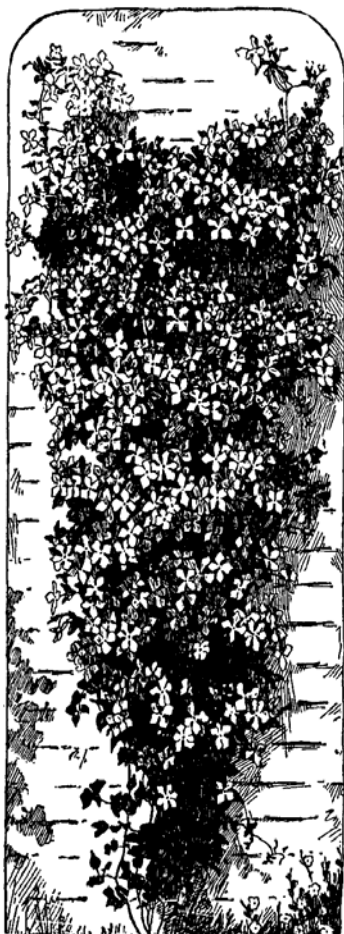
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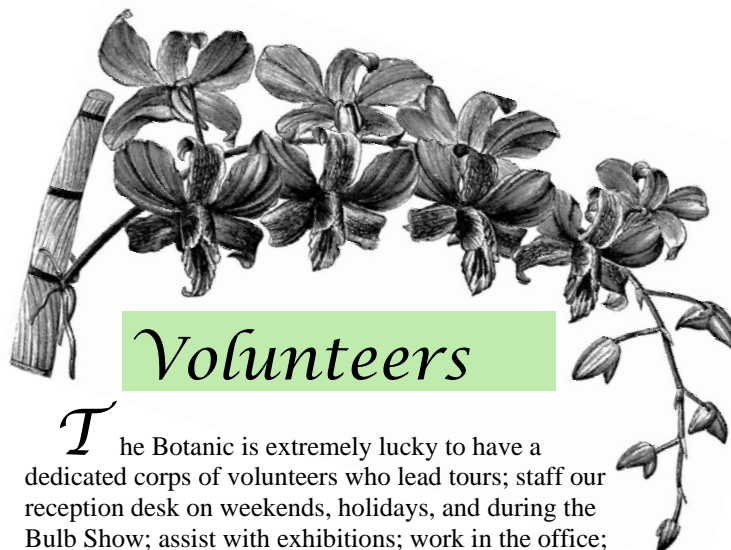
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Volunteers

The Botanic is extremely lucky to have a dedicated corps of volunteers who lead tours; staff our reception desk on weekends, holidays, and during the Bulb Show; assist with exhibitions; work in the office; develop thematic tours for school groups; and do so much more to keep the Botanic Garden going. They enable us to provide an enjoyable and educational experience for thousands of visitors. The following people donated 1400 hours of their time this past year, and gave tours to 1200 schoolchildren!

MANY THANKS!

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You can see pictures of all these items on our website:
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