



Wellesley College Friends of Horticulture

SPRING 2004 NEWS

Remembering Our First Friend of Horticulture



Fleischer; Wellesley College Archives

Harriet B. Creighton

Wellesley College Class of 1929

Wellesley College:

Associate Professor of Botany: 1940-1952

Professor of Botany: 1952-1974

Named the Ruby F.H. Farwell Professor of Botany: 1955

Retired in 1974

as Faculty Emerita, Ruby F.H. Farwell Professor of Botany

The Harriet B. Creighton Room in the Visitor Center was dedicated in 1992 to honor Miss Creighton's years of service to the Botany Department and her ongoing support for the Wellesley College Botanic Gardens.

A Farewell to Harriet B. Creighton

by Mary D. Coyne, Ph.D., Wellesley Class MA '61
Professor Emerita of Biological Sciences, Wellesley College

Wellesley College has lost a long-lived alumna, well-loved professor, and college historian with the passing of Harriet B. Creighton, Ph.D., on January 9, 2004 at the age of 94. Harriet graduated from Wellesley College in 1929 and obtained her Ph.D. from Cornell University in 1933 under the direction of the plant geneticist, Barbara McClintock. Together they published the seminal paper on crossing-over in maize. Miss Creighton stayed on for another year at Cornell as an instructor, and then took up a teaching position at Connecticut College. During that time, she worked on plant hormones with colleagues at the Connecticut Agricultural Station.

In 1940, she returned to Wellesley as a faculty member in the Botany Department and frequently met with her former professor, Margaret Ferguson, by then a Professor Emerita. Six years later in the fall of 1946, on the recommendation of the Botany Department and Harriet Creighton, the department chair, the College's Board of Trustees voted to name the Wellesley greenhouses for Margaret Clay Ferguson. Margaret Ferguson wrote President Horton how "deeply touched" she was by the honor. She also wrote, "It gives me great satisfaction that one of my own girls is now Chairman of the department. I am sure she will be true to the high

standard of work which was established by Miss Hallowell, the founder of the department. . . ." Harriet caught Miss Ferguson's enthusiasm for the Hunnewell Arboretum, Alexandra Botanic Gardens and the Ferguson Greenhouses as premier educational sites and became committed to maintaining them as such. Even after her retirement, Harriet continually monitored their status, providing historical background and personal support when needed.

Harriet retired in 1974 as the Ruby F. H. Farwell Professor of Biology after 30 years on the faculty but remained involved

continued on page 11

Notes from the Director

by Dr. Duncan Himmelman, Director
Wellesley College Botanic Gardens
ghimmelm@wellesley.edu

As you read this, the world outside is starting to awaken from its seasonal rest and we look forward to early spring. However, I am writing in mid-January as we here in the Northeast US are experiencing blisteringly cold winter days. Despite the arctic temperatures, the Alexandra Garden and the Hunnewell Arboretum are picture-perfect, exquisitely dressed in their winter details.



Oaks in the Alexandra Botanic Garden ready and waiting for Spring to arrive. Galen Stone Tower in the background.

Eschewing the outdoors, I recall that my grandmother said we must always give thanks for even the smallest of pleasures, which I do every time I step into the Ferguson Greenhouses these days and envelope myself with the warmth, beauty and fragrance of tropical plants. Walking through the variously themed greenhouses, I take note of the labels in every pot, indicating that our 2003 Curatorial Intern, Henry Kesner, had accomplished so much

in the months he was here. The labels have the accession number and scientific name of the plant on them, and each number has been entered into our plant inventory database, thanks to Henry. We have approximately 1,800 documented plants distributed throughout the houses, information that was unavailable to us even 6 months ago. Next, we are going to sort the data and determine the number of plant families, genera, and species represented by those 1800 plants. At that time, we will be better able to build our collection and “fill gaps” based on faculty needs for both classroom and research purposes. This exacting work has been funded by the Friends of Horticulture, and we are all thankful for their generosity.

Continuing my tour of the Ferguson Greenhouses, I pass the Durant Camellia already in full flower during these first

three weeks of January. I reflect on the rich history it represents and give thanks that it is still with us after 129 years at the College. I notice some of the plants in the greenhouses have large, new labels, thanks to the engraving machine purchased last year with funds from the Friends. This winter Tricia Diggins, WCBG Horticulturist, will be making labels for many of the trees and shrubs in the Hunnewell Arboretum and Alexandra Gardens. Our goal is to have the labels in place for Reunion 2004. In time, we hope that new labels for the greenhouse collection will be made by staff or Friends’ volunteers in our ongoing efforts to improve the quality of our visitors’ experience.

Further to the topic of giving thanks, today, as I was engaged in my morning office routine, a message relaying the passing of Harriet Creighton came my way. This saddened me, as I’m sure it did the legions of people who knew her as classmate, teacher, colleague, and friend. Though I have known her only two and a half years, I am thankful that I had the good fortune of having met Harriet. I surely came to understand what it was that people found so engaging in Harriet: her strength of character, extensive knowledge of plant science, and constant insistence on moving forward and improving what we have before us.

Harriet was a repository of important historic information surrounding the Botanic Gardens, garnered from her personal experiences here as an entering freshman in 1925 to her retirement from the Botany faculty in 1974 and through to last spring when she led a tour of the greenhouses for the new class of docents. She was insistent that I learn the history of the Gardens and provided me the literature to do so. She even quizzed me on how much I’d learned!

In fact, Harriet’s dedication to the Gardens and its immeasurable value to the Wellesley College community of faculty, students and staff were imparted to me on every occasion we met. She was always concerned that the Gardens

continued on page 14

Wellesley College Friends of Horticulture
106 Central Street
Wellesley, MA 02481-8203

781-283-3094
horticulture@wellesley.edu

Dr. Duncan Himmelman, Director
Wellesley College Botanic Gardens
WCFH Faculty Co-Chair

Editorial Committee:
Carole M. Jansson Ely '79
Nancy Dean Kingman '53
Elizabeth Reece
Nancy Webb

Earth's Atmosphere and Beyond

by Jean Fuller-Stanley, Professor
Department of Chemistry
Wellesley College
NESACS 2004 Chair

Many of you are asking yourselves, what does National Chemistry Week have to do with Botany, Horticulture or the Greenhouses for that matter? The week of October 19-25, 2003 was designated National Chemistry Week by the American Chemical Society. Local chemistry communities all over this country used this as an opportunity to capture the curiosity of young minds and to invigorate young people about the wonders and benefits of science. The NESACS kicked off NCW with an entire day, October 19th 2003, of fun yet stimulating science experiments for kids of all ages to explore at Wellesley College. The day's events/activities included the following:



Professor Bassam Shkhashiri working his "magic."

How the northeast section of the American Chemical Society (NESACS) combined National Chemistry Week (NCW) activities with a tour of Wellesley College's greenhouses to excite young minds about science

1. A variety of hands-on discovery experiments related to the theme "Earth's Atmosphere and Beyond".
2. Two showings of the Phyllis A. Brauner Memorial Lecture, by "Magic Show" Chemistry Professor Bassam Shkhashiri.
3. A visit to Wellesley College's Greenhouses.

These activities represented a wonderful synergy of the Sciences, in particular Chemistry and Biology. The chemical experiments involved making such things your own humidity testers, UV light sensitive bracelets and clouds from a demonstration kit. The gases generated by many of the experiments are directly related to those generated and or used by the plants of the greenhouses. This provided the children with concrete applications of the inter-dependency of earth's atmosphere to what we do and how we live. For example, hands on experiments generated carbon dioxide from reactions of typical household items, such as vinegar and baking soda, (to the chemists, acetic acid and sodium hydrogen carbonate). The childrens' visit to the greenhouses enabled them to experience firsthand plants that use carbon dioxide to generate oxygen.

During the Chemistry Magic Show Professor Shkhashiri "fogged-up" the room by generating more gaseous carbon dioxide from dry-ice. In addition to those experiments, the children made paper planes and learned through experimentation the relationship between materials from which the paper is made and the ability of their paper planes to fly.



Students doing hands-on experiments in the Science Center.

Despite dreary New England weather, cold and overcast, over 400 kids of all ages—grandparents, parents and their children—participated in the numerous NCW experiments, attended the lecture-demonstration, and visited the greenhouses on October 19th. While not all were able to experience the wonders of sunlight in making their UV Light sensitive bracelet, they did have direct application in the testing of their Humidity Tester. The organizing committee of NESACS National Chemistry Week is pleased that we were able to extend the learning about Earth's Atmosphere by incorporating visits to Wellesley College's greenhouses.

To learn more about the Northeastern Section of the American Chemical Society, visit their web site: www.nesacs.org. 

To the Friends of Horticulture:



Photograph by Jon Bryan

Professors Martina Königer and Gary Harris with Brita in Hawaii

I wish to extend my most sincere appreciation for your sponsorship of my participation in the 2003 National Conference of the American Society of Plant Biologists in Hawaii. I was awestruck when I entered the convention center filled with hundreds of posters and countless active minds, the scientists constantly asking each other questions, offering ideas, and exchanging fresh perspectives. I accompanied my two closest advisors, Wellesley Professors Martina Königer and Gary Harris, who pointed out renowned members of the field, shared their views on the lectures, and even gave the name for almost every plant that we saw on the island.

We attended the meeting to present our poster on observations of mitochondria size, shape, and dynamics in the plant *Arabidopsis thaliana* under different light conditions. Professor Königer has been studying the distribution of chloroplasts in guard cells under various light conditions (see WCFH Spring 2002 Newsletter). After I assisted her for a part of this project, she proposed that I extend the study to include mitochondria responses under the same conditions.

Mitochondria are centers for energy production within plant and animal

cells. In plant cells, the mitochondria are known to associate with chloroplasts. We studied plant cells with Green Fluorescent Protein-labeled mitochondria engineered by Dr. Yasuo Niwa in Japan. Under the laser confocal microscope, these organelles glow green and can be studied live.

We found that mitochondria do behave differently under various light treatments, changing size and shape and even speed of movement. Mitochondria that are long and spaghetti-like in shape tend to move much faster throughout the cell as opposed to small, sphere-shaped mitochondria. In live tissue, these fast-moving mitochondria will freeze and sometimes turn to spherical shape under high-intensity blue light.

At the presentation of this research, I was approached with questions and insight by other plant cellular biologists. I also viewed other presentations in this area which have sparked new ideas and introduced me to new technologies that I will investigate in the lab this upcoming year, as I conclude my final contribution

to the project with a senior-year thesis. For instance, I learned of a chemical that will allow us to observe mitochondria that are not labeled with GFP, which will be useful to use in mutant plants.

On a more personal note, the trip to Hawaii reunited me with two former long-time neighbors, Janice and Jon Bryan, now retired and living in Jon's native state. I am very grateful for their hospitality while I stayed on the island. Jon took me into the rain forests, national parks, a cultural museum, and even his old high school. I listened to his amateur ukulele, learned a few native Hawaiian words, and had my first taste of poi.

I wish to thank you once again. Your generosity has enhanced my understanding of the scientific community outside of Wellesley, and has helped me to mature as a contributing scientist to the field of plant research. I shall be sure to let you know of the progress I continue to make this year.

Sincerely,

Brita Jessen '04 

Brita shared with us how she started down her current path as an avid student of biology.

My mother went to the college of science at Cornell University and took a degree at Harvard before going to medical school. She is, in my mind, the best and smartest physician in Boston. She keeps up to date with the latest medical journals.

The other day something surprised me: I found I know more than she does about mitochondria. "Brita, this is so neat," she said to me, "Do you know that mitochondria used to be prokaryotes? Look at this article." But I didn't need to look at the article; I already learned that. Mitochondria are semi-autonomous organelles. They have their own DNA, divide on their own, and have a double membrane. All these signs point to the theory that mitochondria used to be cells of their own, similar to bacteria. There was probably a symbiotic relationship between mitochondria and our current-day cell, which engulfed them. Evolution has led to our cells now depending on mitochondria for energy, and mitochondria depending on the eukaryotic cell for many essential proteins and lipids.

I have always grown up asking questions of my mom ... Why don't we take antibiotics for the flu? ... Why do we need vaccine boosters? ... Why do my fingers wrinkle in the shower? ... I've learned many science lessons at home. Even my younger brother teaches me physics at the dinner table (although I don't usually like to admit this).

When as a sophomore I entered Professor Königer's lab asking to volunteer, I just wanted to gain some lab experience and learn about the life of a researcher. Professor Königer has taught me well: research is a necessary combination of data collecting, reading and writing, and learning from mistakes. And as an unexpected result of my questioning, I can now teach my mom something about science.

When I took a break from the piles of papers I was reading over winter break, my brother moved into my spot. Looking over the articles, he tells me, "I actually understand some of this." Yeah, I think to myself, someday you'll probably know more than me, too. 

GARDENING FOR THE ECOSYSTEM: Butterflies, Birds, and Other Critters

by Sharon Soltzberg
Wellesley College
Department of Biological Sciences



If we make our gardens inviting to beautiful creatures like birds and butterflies, they can become important wildlife habitat. While private gardens won't eliminate the need to preserve public open spaces and wildlife corridors between them, our gardens can contribute significantly. However, to become a wildlife habitat, our gardens must become garden ecosystems in which plants, animals, and the environment are allowed to interact in complex ways. And we need to spread the word to the neighbors and beyond because ecosystems transcend property lines.

To be a garden ecosystem and perhaps part of a larger natural ecosystem, a garden needs to be "sustainable", meaning self-sustaining with few outside inputs. To achieve this, we should choose mostly native plants that will not require extra watering once established. We should avoid using man-made chemical fertilizers and instead use organic sources such as fallen leaves and compost. (See http://compost.css.cornell.edu/Composting_homepage.html) These organic materials feed the living soil organisms such as bacteria, fungi, and earthworms which form the base of an ecosystem by releasing nutrients that plants can use from dead and decaying plants and other organisms.

Start out by looking to natural ecosystems for inspiration. Depending on where you live, study and enjoy the forests, seashore, wetlands, or sunny fields that are no longer used for agriculture. Visit naturalistic gardens for more insights. In New England, a great destination is Garden in the Woods, the New England Wildflower Society's botanic garden in Framingham, Massachusetts (see <http://www.newfs.org>). Keep in mind the adage, "Nature writes, gardeners edit."

The following discussion will focus on gardening attitudes and actions that result in attracting more wildlife to gardens. In particular, we are going to first look at effective pest control efforts and changing attitudes about our lawns. Then we look at some creative suggestions for attracting specific

creatures to the garden. Take it from an enthusiastic gardener of more than 30 years; in the long run gardening in harmony with nature is less work and less expensive to both the environment and the gardener!

I. ADJUSTING ATTITUDES

Rethinking Pest Control

We should avoid spraying infested plants with chemical insecticides that are broad spectrum and indiscriminately kill, right along with the pests, the approximately 80% of insects that are beneficial. These include pollinating bees and butterflies, along with spiders and beetles that eat specific plant pests. Whether synthetic or derived from a natural source, insecticides often kill by disrupting the nervous systems of insects. Since the nervous systems of vertebrates like birds and humans function in the same way as those of insects, these neurotoxins are dangerous to non-target creatures—especially young vertebrates, whose nervous systems are rapidly developing. Insecticides can reduce populations of swallows and bats that would eat lots of mosquitoes each evening, and also dragonflies, whose aquatic larvae feed on mosquito larvae. Additionally, the use of fungicides and some herbicides have been found to be harmful to non-target creatures. The use of pesticides can kill off the good soil organisms that cycle nutrients in a sustainable ecosystem. So be sure to read warning labels carefully. We see more and more pesticides taken off the market as data from long term studies become available. Chlorpyrifos (Dursban) was banned in 2000 and diazinon (Spectracide), which was the most widely used pesticide on lawns, was banned in 2001.

To deal with pests and reduce our reliance on chemicals, we need to be more clever. We must learn about pest life cycles and about the most effective times to control them. Biological controls, such as those frequently released in our WCBG Greenhouses, can be quite specific and effective. In both the caterpillar stage of their lifecycle and after they have metamorphosed

continued on page 6

Controlling Pests: A Kinder, Gentler Method for Plants and You

by Elizabeth Reece
WCFH Staff

Tony Antonucci, WCBG Senior Horticulturist, uses two environmentally conservative methods to control pests in the greenhouses. Generally, he uses the gentler method first, and if pests persist (i.e. aphids, scale, whitefly, mealy bugs...) he then moves to the method that is stronger – depending on the plant and the circumstances.

The gentler method is an insecticidal soap. Although a commercial preparation can be purchased, Tony makes a “homemade” mixture of water, canola oil, and non-detergent soap with “Fel’s Naptha Soap”. He has bars of this soap set aside exclusively for making anti-pest solution. These bars are “shaved” into water resulting in granules that dissolve almost instantly. He uses only enough Fel’s Naptha soap to make the water look “murky”, and then adds in a drop or two of canola oil per small spray bottle of the soap mixture. He uses canola oil because it is a light weight oil and relatively odorless.

The other spray that Tony uses on plants is horticultural oil, a product that is available under several brand names at garden centers. Horticultural oil is usually refined petroleum oil combined with an emulsifying agent. While it contains chemicals, they are of low toxicity, and since they dissipate quickly, they leave little residue.

Before using horticultural oil, Tony sprays plants well with water to try to wash off as many pests as possible – then he applies horticultural oil. He cautions that it is critical to read the directions on the product – many horticultural oils will list several plants that should not be sprayed with this product. For example, when sprayed on a blue spruce, it will take the blue color away. It is a good idea to follow any directions such as for the user to wear gloves. Tony also suggests placing the plant in a plastic bag before spraying to protect the surrounding area from overspray.

Tony cautioned, however, that both insecticidal soap and horticultural oil can cause leaf burn on sensitive plants (ferns) – a process called phytotoxicity. Always check the product label or a plant reference book for more plant specific information. Unless he’s working with a sensitive plant known to have a phytotoxic reaction to one of the sprays, he tries to use the home made soap/oil spray first, and if the pests do not go away, he will use horticultural oil.

How do these two methods work in controlling pests? Both solutions block the air holes through which insects breathe so they suffocate. Additionally, the oils can cause a metabolic upset within the insect, and/or disrupt insect feeding methods. Care should be taken using both sprays if you have released beneficial predator

insects. Also, avoid spraying them on a plant that is under drought stress.

Visit <http://ipmofalaska.homestead.com/files/horttools.html> for more information.

Tony Antonucci’s Insecticidal Soap

(Recipe for a 1-pint spray bottle)

½-1 teaspoon Fel’s Naptha Soap shavings
½ teaspoon Canola oil
1 pint water

Increase quantity of soap shavings if plant to be sprayed has waxy leaves (i.e. jade plant.) Conversely, use less soap for tender plants, such as those with hairy leaves (i.e. streptocarpus, begonia). A more dilute solution can be used more frequently. Do not use on ferns or other sensitive plants. For orchids, spot treat with oil-less soap solution by wetting a soft cloth with the oil-less solution. Wipe each leaf or tender stem carefully.

This solution plugs up sprayers over time, so Tony suggests making only enough for the application you need that day. Shake the bottle each time before spraying as it separates easily. Spray both top and bottom of leaves early in the day to allow time for the plant to dry before nightfall. Also, any plant may be spot treated with the soap solution on a soft cloth if you prefer that method.

ECOSYSTEM *continued from page 5*

into adults, lady bug beetles dine on aphids. In contrast, while butterfly adults are plant pollinators, their caterpillars (sometimes called grubs or larvae) are eating machines that may chew up desired garden plants. The key to success here is to provide alternative or extra food sources for these caterpillars. Sometimes, introduced insects don’t target their intended host exclusively. New studies show that parasitic wasps, introduced about 100 years ago to control gypsy moths, may be partly responsible for declining butterfly populations. Two beetles have recently been introduced

from Europe to control purple loosestrife. Hopefully, they won’t take a liking to our native loosestrifes. The interactions of organisms in an ecosystem are complex, and scientists are still learning more about them.

Bt (*Bacillus thuringiensis*) is a naturally occurring soil bacterium that makes a toxin which kills the caterpillar stage of moths and butterflies. It can be sprayed on plants and is used as a last resort by organic farmers. Since many moth caterpillars are agricultural pests, the Bt gene has been bioengineered into some crops; thus we have genetically modified crops such as Bt corn, Bt soybeans, and Bt potatoes. You

may have heard of the experiments at Cornell University investigating the possibility that milkweed dusted with Bt corn pollen harms Monarch butterfly caterpillars. On the positive side, planting Bt corn has reduced chemical pesticide use by farmers.

Thankfully, there are some safe insecticidal sprays that help. Soapy water sprays are used in our Greenhouses, as are horticultural oil sprays that clog insect breathing pores and dissolve the waxy coatings on their exoskeletons.

We should seek out and plant disease or pest resistant cultivars as often as

possible. Finally, a change in attitude consistent with our view of the garden as an ecosystem will allow us to accept some pest damage to our garden plants. For more information visit the web site <http://www.GreenMethods.com>.

Redesigning Our Lawns

The time has come to rethink the large sprawling suburban lawn. It has been estimated that we, as homeowners, use ten times the amount of pesticides and fertilizers per acre on our lawns than is used on agricultural land. Chemical fertilizers are readily washed into bodies of water that can lead to eutrophication—the rapid, excessive growth of aquatic plants and algae, which when they die and decay use up oxygen creating hostile and potentially fatal environments for fish.

A great deal of precious water is used on lawns instead of allowing them to go dormant during dry periods, as they naturally would. Even in relatively wet New England, watering of lawns contributes significantly to the fact that some rivers have chronically low flow in summer, disrupting the ecology of the plants and animals that live in or near those rivers.

To conserve water and reduce chemical use, we can reduce the size of our lawns, which some have called “green deserts”, to what is needed for walking and playing, thus allowing the rest of the yard to become part of our garden ecosystem with plants that will attract birds,

butterflies, and other creatures. To keep what lawn we do have healthy, we can:

- Plant appropriate grass species.
- Use organic fertilizers such as compost or corn gluten meal, which also inhibits crabgrass germination.
- Lime the lawn to create a soil pH that favors grass species.
- Mow the lawn high (2-3 inches in summer) encouraging deep grass roots so the lawn will require less water.

Alternatives to lawns include using groundcover plants such as perennials and shrubs. If there is enough room on your property, try developing a meadow, sometimes called the “new American lawn”, which can serve as a transition between lawn or perennial beds and woods. The meadow usually consists of herbaceous perennials and grasses. Clump formers such as switch grass (*Panicum*), little blue stem (*Schizachyrium scoparium*), and big blue stem (*Andropogon gerardi*) are preferable. Establishing a meadow can be as complicated as any gardening effort or as simple as not mowing the lawn. In New England the natural cover for land is forest, so you must have the meadow mowed at a height of about six inches once or twice a year to discourage woody plants, including invasive plants, from getting established. Mowing is recommended in late fall or early spring prior to May 1 when birds usually begin to nest in the meadow.

A meadow is a diverse, complex plant community which will be very attractive to wildlife.

II. GARDENS IN ACTION

Attracting Butterflies

The habitat that nurtures butterflies is sunny and protected from the wind. Think about adding stone or brick as a decorative element, edging, path, or patio so that these cold-blooded animals can have a spot to warm up early in the day. Muddy puddles or a shallow bird bath (change the water about every four days to prevent mosquitoes from breeding) will attract butterflies. Leaf

continued on page 8



The showy ray flowers of Coreopsis lanceolata, often mislabeled as “petals”, help attract butterflies to the floral nectar contained in the tightly packed disc flowers in the center of the flower head.

Web of Species Photo

Web of Species

Biodiversity in New England and at Wellesley College



Time and space interweave and create our perspective of the environment. Every blade of grass waving in the meadow, every squirrel darting among the tree branches, every maple leaf changing color in autumn represents millions of years of evolution. The myriad ecological spaces on the Wellesley campus support incredibly diverse communities of New England and exotic species. Web of Species enables you to identify and learn about individual species by tracing their evolution through time, or by pinpointing their locations in space, using a map of the Wellesley campus. Discover what vine is creeping in your dorm window, or what bird sings each morning as you walk to class. Open your eyes and increase your awareness of this dynamic landscape.

This unique web site was created by Wellesley students Jiasuey and Allaire in 1998 and has inspired those who visit it.

They wrote, “We began with a goal of creating a field guide to the species found at Wellesley College and in New England. We now present *Web of Species*, a web site combining science and art, incorporating spatial and temporal information about nature and the connections species have with people, history, and each other. We hope to open your eyes to the biodiversity of Wellesley’s landscape and heighten your awareness of species’ relationships in evolutionary time.”

To experience this web site with its interactive campus map, visit <http://www.wellesley.edu/Activities/homepage/web/index.html>. Or search www.wellesley.edu for “Web of Species”

BUTTERFLY PLANTS

(for larval food and/or nectar;
genus names are given)

Non-hardy Annuals and Perennials at Wellesley

Agastache	Gaillardia
Alstroemeria	Gomphrena
Anethum	Heliotropium
Antirrhinum	Lantana
Argyranthemum	Lavandula
Buddleia	Lobularia
Chrysanthemum	Origanum
Citrus	Salvia
Cleome	Tithonia
Consolida	Tropaeolum
Coreopsis	Verbena
Cosmos	Zinnia
Foeniculum	

Hardy Perennials at Wellesley

Achillea	Helianthus
Agastache	Hemerocallis
Allium	Lilium
Anthermis	Monarda
Armeria	Nepeta
Asclepias	Origanum
Aster	Phlox
Calamintha	Petroselinum
Centranthus	Rudbeckia
Chrysanthemum	Ruta
Coreopsis	Salvia
Delphinium	Scabiosa
Dianthus	Sedum
Echinacea	Silphium
Echinops	Solidago
Eryngium	Thymus
Eupatorium	Veronica
Helenium	Viola

Woody Plants

Aesculus	Lindera benzoin
Betula	Philadelphus
Buddleia	Potentilla
Caryopteris	Prunus
Ceanothus	Rosa
Clethra	Salix
Cornus	Styrax



Web of Species Photo

The flat clustered flower of Queen Anne's Lace (Daucus carota) is ready to open into its easily recognized umbel (umbrella like) inflorescence resembling lace.

litter in a nearby woody area provides protection from birds and for overwintering, usually in the egg or pupa stage, of non-migrating butterflies.

You probably have noticed that butterflies seem less common than they used to be. The loss of habitat where specific larval food grows is the number one cause of species loss. The larva, which is the main eating stage of the butterfly, must eat leaves, green buds, and stems of specific plants. For instance, black swallowtail adults lay their eggs on umbelliferous plants, e.g. parsley, dill, Queen Anne's Lace, wild carrot, and cow parsnip. Monarch butterflies lay their eggs on milkweeds such as white milkweed in the wild and butterfly weed (*Asclepias tuberosa*) in the garden. The larvae of many fritillaries prefer violet leaves, and eastern tiger swallowtail larvae eat the leaves of the tulip tree (*Liriodendron tulipifera*) and wild cherry trees. Since butterflies evolved using native food sources, planting native species in your garden will help sustain local butterfly populations.

The food needs of adult butterflies are not as plant specific, nor do they focus on flower color. Instead—adults often use flower fragrance as a signal that floral nectar is present. Adult butterflies feed on the nectar by using their long, coiled mouthpart, the proboscis, which uncoils like a straw to suck up liquids.

Flowers have evolved to attract insects, birds, bats and other animals to facilitate cross pollination. These creatures carry pollen from the male part of one flower to the female part of a flower of a different plant of the same species. This ensures more variety in the genetic makeup of the species. To pollinate citrus plants in our Ferguson Greenhouses in the absence of pollinating insects, the same thing can be accomplished with a small paintbrush.

Two general flower types are especially attractive to adult butterflies:

1. many small flowers clustered together so that flowers open in sequence and form a landing platform, e.g. butterfly weed, *Pentas*, yarrow (*Achillea*), *Sedum*. Also, members of the composite family, such as asters, purple coneflower, and black-eyed susan.
2. tubular flowers with nectaries so deep that bees can't reach them but butterflies with their long tongues can. Some of these plants, if the flowers are some shade of red, are also attractive to hummingbirds, e.g. bee balm, *Nepeta* species, and nasturtium (the spur contains the nectar).

For more information see <http://forums.gardenweb.com/forums/butterfly> and <http://www.uky.edu/Ag/Entomology/entfacts/misc/ef006.htm>



Nasturtiums whose spurs (see arrow) are filled with nectar—from the display arch in the Ferguson Greenhouses.

HUMMINGBIRD PLANTS

(for nectar; choose red, orange-red, coral flowers; genus names are given)

Non-hardy Annuals and Perennials at Wellesley

Abutilon	Lantana
Agapanthus	Lobelia
Agastache	Mirabilis
Antirrhinum	Nicotiana
Callistemon	Penstemon
Canna	Pentas
Cuphea	Petunia
Dicliptera	Phaseolus coccineus
Fuchsia	Phlox drummondii
Hamelia	Phygelius
Hibiscus	Salvia
Impatiens	Stachys coccinea
Ipomoea	Tithonia
Kalanchoe	Tropaeolum
Kniphofia	Zinnia

Hardy Perennials at Wellesley

Asclepias	Liatriis
Aquilegia	Lilium
Bergenia	Lobelia
Delphinium	Malva
Dicentra	Monarda
Digitalis	Penstemon
Epimedium	Physostegia
Hemerocallis	Stachys
Heuchera	Symphytum
Hosta	Yucca
Iris	

Woody Plants

Aesculus	Syringa
Buddleia	Weigela
Campsis radicans	
Lonicera sempervirens	



The fleshy red berries of Winterberry (*Ilex verticillata*) in the Botanic Garden provide food for birds during the cold winter months.

Providing for the Birds

If you want birds to nest and forage in your yard, don't be too neat. Birds need leaf litter or brush piles (good for butterflies to hide from birds also), evergreen shrubs, and large trees (such as oaks, sugar and red maples, and beech) for refuge. Even if you have nearby woods with large trees, consider planting some trees. Since they will take time to grow, there is no time like the present to start planting trees. Plants should be allowed to grow in their natural shapes which provide branching spaces for refuge and nesting.

Benign neglect is good in the far parts of the garden, but be on the lookout for invasive, non-native plants which often fill in neglected areas, crowding out natives. Ironically, the seeds of invasive plants such as barberry, oriental bittersweet, burning bush (*Euonymus alatus*), bush honeysuckle, and multiflora rose, are often spread when birds eat their fruit. Many of these invasive species were introduced by the horticultural industry and used to be recommended for plantings to attract birds. Consult the web for more information about non-native, invasive plants (<http://www.invasivespecies.gov/>). Avoid planting them in your garden and be proactive about removing those "volunteer" invasive plants.

Birds respond to the sound of water for drinking and bathing. You can supply running water by hanging a plastic bottle of water with a tiny hole to drip over a shallow bird bath or by buying a water spout made for this purpose. Another interesting item that can be purchased is a cascade with a series of waterfalls and a recirculating pump that is solar powered.

When choosing flowering plants to attract birds, keep in mind that birds have excellent vision but a poor sense of smell. The ruby throated hummingbird, the only hummingbird east of the Mississippi, is attracted to red in all its hues, scarlet, red-orange, coral. They are especially attracted to tubular flowers with no landing platform as they can hover. To bring them into your garden, plant our



Hummingbirds are attracted to tubular flowers such as these Fuchsia blossoms in the Season Display of the Ferguson Greenhouses.

native coral honeysuckle vine (*Lonicera sempervirens*), bee balm (*Monarda*), and red salvias and penstemons. Many of the perennial species of penstemon, sadly, are not hardy in the Boston area and farther north.

Songbirds generally are of two types, the insect eaters with relatively longer, thinner bills and the seed eaters with fatter, stronger bills for cracking open fruit and seed coats. Interestingly, many birds that eat insects such as butterfly larvae in the spring switch to nectar, fruit and seeds in the summer, fall, and winter as these become available. Seeds may be produced in dry fruits such as those of grasses, sunflowers and other members of the aster family, or on the cones of conifers. Bird feeders filled with black oil sunflower seeds are especially enjoyed. Birds that eat insects will appreciate suet in winter. Experts say they do not need the supplemental feeding, but on cold winter days it is satisfying for humans to provide some extra treats.

Birds that are fruit eaters eat fleshy fruit. Have you noticed that many fruits produced by plants are some shade of red? Insects can't see red, but birds and mammals (like us) are attracted to red. So some plants have evolved to use birds and mammals to disperse their seed into new habitats. The birds eat the fruit and the seeds pass through their digestive tracts, causing scarification of the seed coat and thus aiding in seed germination.

continued on page 10



The red fruit of Crabapples (*Malus* sp.) often overwinter and are a favorite food for birds as well as many other critters including deer.

PLANTS FOR SONGBIRDS

(for seeds or fruit; genus names are given)

Non-hardy Annuals and Perennials at Wellesley

Amaranthus	Helianthus
Calendula	Phlox
Celosia	Portulaca
Centaurea	Tagetes
Cosmos	Verbena
Eschscholzia	Zinnia

Hardy Perennials at Wellesley

Andropogon	Helianthus
Aster	Opuntia
Calamagrostis	Panicum
Chasmanthium	Phlox
Chrysanthemum	Rudbeckia
Coreopsis	Solidago
Helenium	Yucca

Woody Plants

(* = evergreen conifers)

Abies*	Parthenocissus
Acer	Pinus*
Alnus	Platanus
Amelanchier	Populus
Arctostaphylos	Prunus
Betula	Quercus
Chamaecyparis*	Rhododendron
Cornus	Rhus
Crataegus	Rosa
Fagus	Sambucus
Ilex	Sorbus
Juniperus*	Taxus*
Lindera	Thuja*
Malus	Tsuga*
Morus	Vaccinium
Myrica	Viburnum
Nyssa	Vitis

ECOSYSTEM *continued from page 9*

Overwintering fruit is especially important and is provided by such native plants as winterberry, a deciduous holly (*Ilex verticillata*), crabapples with small fruit, and American cranberry bush (*Viburnum trilobum*).

For more information, see:
<http://birding.about.com/mbody.htm>
<http://www.audubon.org>
<http://forums.gardenweb.com/forums/hummingbird>.

And for the Other Critters

When we make our gardens attractive to birds and butterflies, we will naturally attract other critters such as frogs, toads, chipmunks, squirrels, rabbits, woodchucks, deer, raccoons, and skunks. We will be pleased with, or at least tolerant of their presence. Unfortunately, because we long ago eliminated predatory species such as coyotes and wolves from our landscapes, the populations of some of these garden visitors are not being kept under natural control. One thinks especially of deer, which can rapidly defoliate garden plants and may also carry Lyme disease. To control deer eating habits, consider some combination of the following:

- Install a strong fence at least eight feet high. For information on deer fencing, do an internet search. There are several quality suppliers of fencing products

with successful track records. Their web sites are loaded with information.

- Use organic chemical repellents, which are repulsive but not harmful.
- Choose plants less favored by deer. See <http://www.rce.rutgers.edu/deerresistance>

Most encouraging of all is that predatory species, coyotes and predatory birds such as hawks and eagles, are returning to our landscapes. They will keep some of these other critters under control so that our ecosystems may eventually return to a more sustainable level of complexity.



Highbush Blueberry (*Vaccinium corymbosum*) provides long season support for birds with both flowers and berries.

Sharon Soltzberg is a retired Senior Instructor in Science Laboratory in the Department of Biological Sciences at Wellesley College. She holds a B.A. degree in Biology from the University of Delaware and M.S. degree in Biology from the University of Pennsylvania. Sharon taught at Wellesley College from 1986 to 2003. She has taught labs in Introductory Organismal Biology, Introductory Cell Biology, Human Biology, and Microbiology, as well as in a course on Plants, People, and the Environment (previously called Environmental Horticulture). Sharon is particularly interested in the environmental issues associated with land use and landscape design. She is presently serving on the Conservation Commission in Needham. 🌱

A FAREWELL *continued from page 1*

in College activities for almost another 30 years. During her post-retirement years she wrote the chapter on “The Grounds” for the centennial book *Wellesley College 1875-1975, A Century of Women* and served on the 1998 Campus Master Plan Committee. In addition, she was an National Science Foundation consultant in India, taught at the Radcliffe Landscape Design Seminars, and was a trustee for the Massachusetts Horticultural Society with special concerns for its educational programs and the contents of its magazine, *Horticulture*. Her enduring focus continued to be botanical education; she showed us that retirement is not an ending but, in fact, another beginning.

Harriet was a great storyteller with tales of early days of genetics research, wartime stories of her service in the U.S. Naval Reserve for Women, the WAVES, Wellesley’s varied presidents, students and colleagues, and travels throughout the world. When someone has been around as long as Harriet you get to know only the part of her life that you and she have shared, but you do not gain a grasp of the time span of her experiences and knowledge. It is only when someone wants to know where the cross-section of the redwood tree in the Focus of the Science Center came from, or the botanical drawings lining

the hallways, that you realize Harriet was the only one who knew. And the amazing part is that she remembered everything in great detail to the end.

There are more honors such as being the third woman president of the Botanical Society of America (the first was Margaret Ferguson) and recipient of the “Large Gold Medal” from the Massachusetts Horticultural Society for her botanical expertise and ‘horticultural concern in the community’, but her greatest legacy was just being herself.

Many former students have written to express their fond remembrances of Harriet. Barbara Rappaport ’44 defined Harriet with the adjectives — “shrewd, kind and breezy”. This is the Harriet I remember. After complaining that I had a favorite plant die, I was told by Harriet to “stop worrying about it, throw it out and get another one.” It was the best horticultural advice I ever had.

Harriet was much admired by the Friends of Horticulture as their number one champion. She carried the original germ of the idea across several decades until two trustees at last took it up, and in 1983 the Friends was founded (see Fall 2003 Newsletter for a history). She served on the WCFH Steering Committee and was pleased to have the gathering room in the Visitor Center named in her honor.

We will all miss a good friend, entertaining companion, knowledgeable botanist,



*Harriet in the Cool Temperate Greenhouse discussing the inflorescence of the *Thumbergia grandiflora* with the WCFH 2002 Docent trainees.*

college historian and committed educator. Goodbye, Harriet. We consider ourselves fortunate to have known you. 🌱

More stories about Harriet Creighton on pages 12-14

Many thanks to Wellesley College Archives staff, Wilma Slaight and Jean Berry, for their cheerful and efficient responses to our many inquiries.

A Toast to Harriet Creighton

given at North Hill, Needham, MA on January 23, 2004 to a gathering of Harriet’s admirers

I met Harriet Creighton when she caught me picking the cashews out of the mixed nut dish at a reception for Wellesley freshmen. Her remarks made it clear to me that she could handle, with a sense of humor, the brash young thing I then was at age seventeen.

She subsequently became my faculty advisor throughout college, my mentor in genetics (a field in which her early papers with McClintock are among the classics), my moral support throughout graduate school and a friend ever since.

I have never known anyone except my mother who exhibited such joie de vivre. Harriet was eternally curious and explored almost everything in her path: cultural, geographic, scientific, and gustatory. And she certainly appreciated a good drink.

So, let us raise our glasses and drink a toast to Harriet Creighton and her life, joyously, generously, and productively lived.

-To Harriet -

— Ann Mathews Lacy
Wellesley Class of 1953

Tales from Miss Creighton's Botany Classroom



Wellesley College Archives

Early Summer 1947—Miss Creighton checking a student's work in the student perennial beds in the Botanic Gardens, a part of the Hunnewell Arboretum now called "The Wedding Area."

Ginny Malloy Walker '53, an economics major, writes about her brief foray into the sciences . . .

It was Fall 1949 and my first year at Wellesley when I took Interdepartmental 103, a combination botany/zoology course taught by Miss Creighton. I was in awe of Miss Creighton and everything else at Wellesley and hated botany. I spent a lot of time wishing I had taken astronomy as a lab science. Final exam time came, and I was so far behind I didn't try to study. I just resigned myself to another year of lab science.

The first question on that exam was to set up an experiment using 100 potatoes. Miss Creighton wrote, "You have 100 potatoes. Using half these potatoes you

are to prove the following in 10 steps. . . ." For my answer I began, "Step 1. Pick the 50 best potatoes." And that was all I wrote because that was all I knew. I handed in my bluebook, and a few days later received a notice to see Miss Creighton in her office in Sage.

Over I went, beyond hope. I will never forget what she said, "Miss Malloy, you failed your exam, you failed the course, but I am passing you because you are the only student who knew the first step—you picked the 50 best potatoes." Those words have stayed with me ever since—think about them—there is much value in knowing and then taking the first step even if you don't know the second step.

Almost 50 years went by and our paths crossed again. Miss Creighton had given up driving, and I started driving her around to some medical appointments, a few errands, and occasional feasts of fried clams at Nick's, a local restaurant. We no longer had a formal teacher/pupil relationship but still, it took me almost 2 years to screw up my courage and call her Harriet as everyone else did.

So, I have my two sets of very separate memories—my Miss Creighton memories and my Harriet memories—and each set is cherished.

Ann Lacy '53 remembers Miss Creighton's unique wit . . .

Miss Creighton lectured in an informal, anecdotal style and normally allowed time for comments and questions from students. She was relaxed and seldom disturbed by student antics. However, I remember one particular time when this was not the case —

Trained as a plant geneticist and not as a zoologist, she was clearly uncomfortable as she taught a section of the combined biology course for the first time and had to dissect a guinea pig in front of the class. All through the ordeal, an annoyingly chatty student kept up a barrage of tiresome questions and comments as she had done all semester. Eventually, the student queried, "What is that hanging out of the guinea pig's mouth? What does it use it for?"

At this Harriet laid down her scalpel and forceps, gave the student a withering

Harriet Creighton Botanical Greenhouse Fund

Gifts in memory of Professor Emerita Harriet Creighton may be made to an endowment fund supporting the Margaret C. Ferguson Greenhouses, originally named by Harriet the "Botanical Greenhouse Fund." After she established the endowment in 1955 with an initial "modest" (to quote Miss Creighton) gift, Harriet continued her support of this fund over the years and encouraged others to donate as well. Although Harriet did not wish her name to be attached to the fund while she was actively involved at Wellesley, she wrote (in typical Harriet style), "If after I am not in active service there should be any reason to mention my name, it is all right with me." The College has decided to honor Harriet by renaming it the "Harriet Creighton Botanical Greenhouse Fund" knowing that it would be just fine with Harriet.

You may send your contribution to:

Development Services
Wellesley College
Harriet Creighton Botanical
Greenhouse Fund
106 Central Street
Wellesley, MA 02481

Please make checks payable to:
Wellesley College

look, and said rather fiercely, "Just because a guinea pig does not talk all the time does not mean that it does not have some other use for its tongue."

The whole class was tempted to cheer. Perhaps it was fortunate that Harriet's patience ran out before the dissection reached the male reproductive system. . .

continued on page 14

On-Line Remembrances

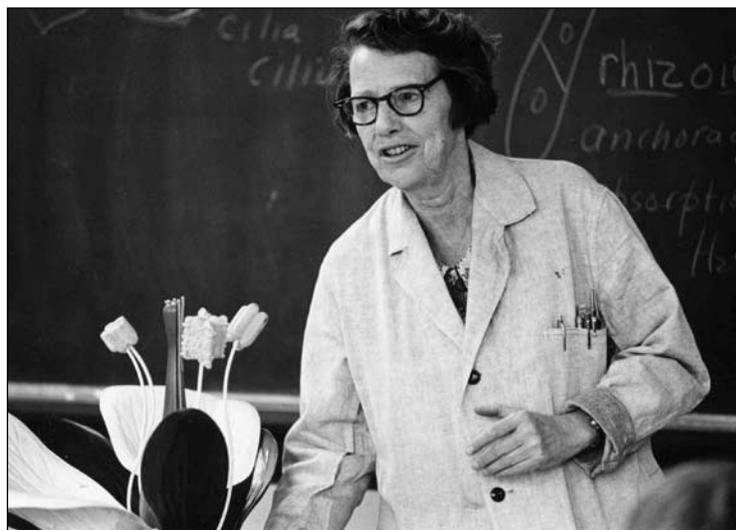
Harriet B. Creighton

A great researcher
A marvelous teacher
A magnificent chronicler of Wellesley College history
A delightful story teller
A loyal friend who will be missed

Phyllis J. Fleming, Professor of Physics, Emerita

Harriet Creighton was an amazing teacher; I took two courses from her in the sixties . . . so much enthusiasm for her subject matter . . . impossible not to be thrilled to be there learning in her classroom. Even for non-scientists . . . she must have inspired hundreds of students to go into botany.

Wilma Riemenschneider Kassakian '68, Information Services



Wellesley College Archives

Using the Flower Models that she developed as an educational product, Miss Creighton explained the intricacies of plant reproduction.



Mary Jane Ertman

Harriet B. Creighton '29, professor of botany emerita, gave a lecture on "Understanding Botany" as part of the April 6 dedication ceremonies for a new entrance and Visitor Center at Wellesley's Margaret C. Ferguson Greenhouses. She is shown (above) in the Visitor Center's Creighton Room, which was named in her honor. The construction project completes ten years of greenhouse renovations.

She was just plain amazing, pure and simple. When I first got here, she called me up to give me "the Wellesley scoop." Any history question I had, she'd answer it for me. She told me all about the Wellesley culture. When we did a story about Mildred McAfee and the WAVES not too long ago, Harriet provided us with a huge amount of WWII era information. She had an incredible memory, and told the funniest, saltiest stories about backroom goings-on at Wellesley. I just loved listening to her talk. She was president of her class, actively kept in touch with classmates, and kept us on our toes making sure we kept '29's class notes up to date.

What I loved best of all with Harriet, however, was watching her walk into a room full of alumnae. They all just adored her and would swarm over to speak to her. She was once introduced at the opening dinner of Alumnae Council and immediately 200 people in the room were on their feet applauding her. That spoke volumes about her teaching and the relationships she maintained with her students.

Because we're deep into the production schedule for the winter magazine, we won't be able to do a memorial tribute

until the spring issue, but we've had fun over the last few days selecting pictures for the story. We've seen them from all the various stages of her career: Harriet in front of students in a classic pose, Harriet with a garden of pansies, Harriet with a huge model of a flower, portraits of her as a young woman. Archives has some great shots.

Hats off to a great lady!

*Alice M. Hummer, Editor,
Wellesley magazine*

I remember Harriet with great affection starting in my first year at Wellesley. A friend and I went to the Club (almost) every evening for a drink, and Harriet often joined us. She was filled with stories of Wellesley, M. Clapp (as she called her), how things were done at Wellesley (Academic Council and the faculty had all the power ... particularly interesting in light of recent views), and on and on with her encyclopedic breadth. It was really a neat experience from a time when not all that many people even noticed new faculty members.

Judy Brown, Physics 🌱

Reprinted from *Wellesley magazine*,
Summer 1992, page 53

FROM THE DIRECTOR

continued from page 2

would continue to encompass the needs of both the academic and public audiences it served. Harriet was forward-thinking to the last. She was interested in the proposed plan for refurbishing the greenhouses in order to ensure the science of botany could be taught in the most favorable environment. I will miss her energy and support, and can only hope that I will be as lucid and focused for as many years as was she.

Please be sure to take time to enjoy the green world around you, and give thanks to those who make it possible. I will.

Yours,



P.S. If you are back on campus for Reunion 2004, be sure to drop by the Visitor Center and join me for a tour of the Gardens!

TALES

continued from page 12

Barbara N. Rappaport '44 knew her as teacher, associate, and advocate . . .

Harriet was everybody's favorite person—Wellesley classmates, students and colleagues. For me, Harriet was the dynamic professor in the big Botany 101 lectures—a clear favorite with the students, as she was lucid and lively in exposition. She had a brilliant mind and was a top notch researcher before undertaking teaching at Wellesley where she concentrated on students. Three adjectives help define Harriet are shrewd, kind and breezy—a real breath of fresh air to all around her.

When she had been called from the classroom to be part of the initial core of Mildred McAfee's WAVES, she became my superior officer, jaunty in her uniform teaching students going on to be officers. When I became a civilian again, I was asked to become secretary of the Botany Department at Wellesley, and Harriet was Department Chairman. I had the pleasure and adventure of working with her daily.

That year, she had the idea for a Garden Day, when local garden clubs were invited to come to Wellesley for a program and to view the greenhouses and gardens. This led eventually to the Friends of Horticulture, fund raising,



Mary Bragg '40 chats with Harriet Creighton '29 at the Friends of Horticulture Annual Meeting 2003.

and the present arrangements that are among the very best college greenhouses in the United States. Harriet always attended the meetings of the Friends and kept great enthusiasm for botany programs all her life. She especially honored the legacy of Ms. Ferguson, and the teaching aspects of greenhouse use. So long, Harriet, you have left us your great legacy. 🌱

**Thanks
For Your
Continued
Support!**

Year after year, members of the Friends of Horticulture—that's you—have generously contributed to the Friends' general operating funds and special projects. We are so grateful to those of you who send the basic membership amount and especially grateful to those who add a bit more to your gift. Your support makes it possible for the Friends to continue providing much needed support for the Wellesley College Botanic Gardens and for horticulture here on campus.

Thank you for continuing to make the Friends of Horticulture a priority in your giving.

Scott Birney, Treasurer
Professor Emeritus, Astronomy

Oaks in the Wellesley College Botanic Gardens

by Carol Govan
WCFH Docent Training Coordinator



Observe the classic Black Oak (*Quercus velutina*) characteristics: the acorn where the cup with overlapping scales covers about half the nut; the leathery, shiny green leaves with their bristle-tipped lobes; and the large light-colored hairy buds.

Mid-spring, oaks are extending their long, slender pollen-bearing catkins from buds formed last fall. They are at the base of the new shoots covered with fuzzy, pink leaves. The imperfect flowers are monoecious (one house) with separate male flowers and female flowers on the same tree. The female flowers, where the acorns will form, are in the leaf axils (angles where the leaves and twigs meet) on these shoots. They look like buds but are on a little stalk and you can see the three-pronged stigma: the pistil's surface that will catch the pollen. You have to look closely because they are wind-pollinated and not very showy. Soon after pollination, though, you will see the baby acorns develop. Some years you will find tons of acorns on the ground

but not every year. These “mast” years insure the oaks survival. Oaks generally produce a moderate amount of acorns that the squirrels and birds store and eat, leaving relatively few to spout. When they radically increase their number as in a mast year, the seed predators can't hope to find them all.

The foliage on oaks is quite variable. The leaves on a new seedling or sucker shoot might be larger and have shallower sinuses (sinuses form the depressions between leaf lobes) than the parent tree, ensuring there is more green surface area to photosynthesize. Even leaves on older trees will be different on the same tree. The ones higher up will have deeper sinuses that allow the sun to filter down to the lower leaves. This is especially true on black oaks. Compare some leaves from the same tree that you find on the ground. There are always whole oak leaves to examine. They resist decomposition because they are high in lignin (a substance that adds strength to some cell walls of plants). Most oak leaves turn a lovely chestnut brown in the fall, whereas the scarlet oak turns a wine red color. This is the time that you can really identify a scarlet oak for sure. Several species of oaks in the Arboretum are found around the Beeches (*Fagus*) and Chestnuts (*Castanea*), also in the Oak Family (*Fagaceae*), and all have uniquely shaped leaves.

The oaks are divided into two sub groups: (1) the red oaks (red, black, scarlet, etc.) which have bristle tipped lobes on their leaves and take two years to produce mature acorns, and (2) the white oaks (white, swamp white, etc.) that have rounded lobes and produce acorns in one year. There is a red oak (*Quercus rubra*), a black oak (*Quercus velutina*) and a white oak (*Quercus alba*) on the way to Gray parking lot from the Visitors Center where you can easily compare the buds, bark, leaves and acorns of these three common native New England trees. The branches of the black and white oaks extend downward so you can examine them closely. Oaks have several buds (one terminal and several lateral) clustered at the end of their twigs. This

is very distinctive in the winter. The buds on the black oak are sharp-pointed, angled and covered with whitish wooly hairs. The white oak buds are much smaller, rounded and not wooly. Can you find three different acorns from these trees? On oaks in the red oak group, you may see small acorns on this year's growth and larger ones from the previous season lower down on the same branch, while the white oaks will only have acorns the same size.

I often pick up fallen branches and look for the female flowers, or immature acorns. The male flowers will not stay on the tree but will fall when they mature and release their pollen. They look like long skinny caterpillars all over the ground or stuck in nearby trees. I also like to look at the shape of the pith (soft tissue in the stems) at the cut end of an oak twig. If you look down on the twig the leaves spiral around 5 times before they come out at the same angle again. This means the leaves are five-ranked and the pith looks like a five-pointed star. In late spring and early summer, you can often find smoothly cut oak twigs on the ground with green leaves attached that indicate the work of a twig pruner, the larva of a long-horned beetle.

Other oaks in the Botanic Gardens:

- Japanese Oak (*Quercus acutissima*) on Observatory Hill towards the southwest corner
- Swamp White Oak (*Quercus bicolor*) along College Road
- Scarlet Oak (*Quercus coccinea*) a specimen tree near the Witchhazel Group
- Shingle Oak (*Quercus imbricaria*) that does not have lobes but does have bristle-tipped points
- Bur Oak (*Quercus macrocarpa*)
- Swamp Chestnut or Basket Oak (*Quercus prinus*)
- Chinquapin Oak (*Quercus meuhlenbergii*) near the Chestnuts and Beeches
- Shumard Oak (*Quercus shumardii*) a memorial tree on Fiske walk similar to our Red Oak and native to the Southeast. 

The New England Tropical Conservatory

by Nancy Dean Kingman '53
WCFH Docent Co-Chair

*As part of the WCFH
Volunteers ongoing
training program called
“First Mondays,”
Dr. Mary M. Fuqua,
President of the Board of
Directors of the New England
Tropical Conservatory
(NETC), recently visited
Wellesley College to share
with the Friends of Horticulture
docents and volunteers news of
her fledgling organization and
its projects. WCFH
looks forward to watching
this organization grow!*

The New England Tropical Conservatory was founded in 1991 by a group of people concerned about the deforestation of tropical rainforests and the resulting extinction of tropical plant species. Their goal is to contribute to the preservation of tropical rainforest plants through research, education and exhibition. They have recently purchased a ninety-six acre site in Bennington, Vermont, which ultimately will have greenhouses, research, and education buildings. Through this facility and the work of the NETC, they plan to make conservatory plants available for research, to create materials for public education, and to build awareness of the need to protect the world's rainforests. In the future, visitors to the NETC will see the valuable connections of our plant world to that of the tropical rainforest. Some examples of plant families we share with the rainforest in Indonesia are: pine, blueberry, impatiens, nettles, and raspberries.

Dr. Mary M. Fuqua retired ten years ago from her position as Dean of Graduate and Continuing Education at Massachusetts College of Liberal Arts, and was looking forward to hiking and walking in the outdoors more often than she had been able to. She had always enjoyed the world of plants, and loved observing native plants in their habitats. She called a friend, Scott Hoover (a current NETC Board member), who happened at that time to be hatching the idea of building a conservatory for tropical plants in New England. Mary offered her help, little suspecting that it would blossom into the passion and cause that it has become.

One of the first tasks at hand was to figure out where botanical expeditions should be conducted, as the NETC was going to practice “ex situ” (off site) preservation. There are two places in the world with an unusually high level of biodiversity — Brazil and Indonesia. Since Brazil already had a great deal of research taking place within its borders, the fledgling NETC decided to concentrate on Indonesia.



The picture was taken in 2001 at a tea plantation where the wooded hillside visible in the background is cleared year by year to make way for more tea. Begonia muricata was found here. Left to right: Harry Wiradinata, Senior Botanist at the Bogoriense Herbarium; Scott Hoover, NETC founder and collector; Mary Fuqua; Johnny Tee, their driver.

They chose to do their research at the Herbarium Bogoriense in West Java Province — the national herbarium of Indonesia, and an established, leading institute with botanists and technicians already on staff. A small NETC group took expeditions to the Bogoriense Herbarium to collect and taxonomically describe new species of *Begonia* and other herbaceous plants from the forests. This study would provide data for a survey of species diversity in the genus *Begonia* as an indicator of overall biodiversity in the Indonesian montane forests where many, many acres of forest are being lost to the timber trade and to agriculture. The collection of such plants will assure the preservation of species that might otherwise be lost.

The NETC and the Herbarium collaborate about which plants should be collected. The NETC continues to concentrate on *Begonias* and related species (i.e. *gesneriads*) and ferns. They will ultimately collect plants, trees and

The NETC and the American Begonia Society Connection: Supporting Conservation and Responsible Collecting

Seed and plant collection in native habitats has often been randomly done to the detriment of many endangered species. Here is an example of one organization that has reversed that trend and is scientifically and responsibly protecting and documenting special plants.

Founded in 1932, the American Begonia Society (ABS) has a current worldwide membership of 1,300. The Society's mission includes the promotion of interest in begonias, development of new types of plants, standardization of begonia nomenclature, and the gathering and publishing of information about begonias. Additionally, the ABS promotes education and conservation, and provides a seed bank from which members can request or purchase seeds of various species.

Some of the seeds in the seed bank are acquired by adventurous collectors, like Scott Hoover, the Founding Director of the New England Tropical Conservatory. In January of 2000, Scott set out on a 20-week begonia collecting expedition to Java, Indonesia. These lush mountains are largely unexplored due to their difficult access. The leader of one of four collecting teams that explored five mountains in Java, Scott worked closely with three other botanists from the Herbarium Bogoriense. They collected begonia plants for herbarium specimens, seed, epidermal peels, and preserved (pickled) live leaf material. All of the seed collected went to the American Begonia Society.

The ABS distributed seed to individuals who contributed funds to support the expedition (if the contributor requested), to designated growers, and to the ABS Seed Fund, a members-only repository from which seed can be purchased.

Upon completion of the begonia collecting expedition in Java, Scott and his colleagues conducted a taxonomic revision of the Begonia of Java, the only systematic treatment of the Begoniaceae of Indonesia. If funds allow, additional expeditions will continue (without Scott), and new specimens will be included in the revision of Begonia of Java.

To learn more about ABS, check their web site at www.begonias.org or write them at: American Begonia Society, P.O. Box 471651, San Francisco, CA 94147-1651.

shrubs that have affinities with north temperate plants, i.e. have a genus and/or family connection. This will help the NETC visitor connect local plants to those native on the far side of the world.

Exploration and field research is carried out in cooperation with scientists and technicians at the Herbarium Bogoriense. This group collects each plant in triplicate — one is for the Herbarium in Bogor; a second is for Harvard University's herbarium; and the third is for the University of Leiden in the Netherlands, a country which still has ties to Indonesia. After

specimens are collected, pressed and dried by the Herbarium's field botanists and technicians, they identify and give a taxonomic description of newly discovered species. The NETC has been granted permits to take seeds and specimens out of Indonesia and into the United States.

Harvard provides a valuable service by mounting and cataloguing the specimens into their collection. *Begonia* seeds that have been collected, dried and brought back have thus far been directed to the American Begonia Society (see related article above.) This organization has

provided some funding, and can provide experienced growers for the task of producing plants from seed. Back in Indonesia, 140 pressed specimens of *Begonia* and 2,300 general botanical specimens have been deposited at the Herbarium as a result of the collaboration. It represents some of the first systematic samplings of these forests and has confirmed the existence of at least 20 new species of *Begonia* discovered within three year's time.

A portion of the seeds and live plants brought back from Indonesian expeditions are taken to western Massachusetts where greenhouse space has been donated to NETC. There, additional propagation, growing and maintenance are being conducted. To fulfill their educational mission, the NETC plant collection and facilities are available for college and university courses and programs, as well as for environmental education studies at the primary and secondary levels. In fact, one of the plants Dr. Fuqua exhibited at our October meeting was grown from seed collected in 2002 at an elevation of 1,600 feet on Mt. Cikuray in West Java Province. A rhizomatous species, it bears the name *Begonia muricata* and is now part of the Ferguson Greenhouse collection.

In addition to the construction of greenhouses with a conservatory open to the public, the new NETC headquarters building in Bennington, VT will have a visitor reception area, shop, café, classrooms and office space. The surrounding grounds will be landscaped into a botanic garden that will include walking trails and nature study stations. Visitors will be able to enjoy the beauty of tropical plants and learn about the rainforests from which they have come.

To learn more about the New England Tropical Conservatory, check their web site at www.netrop.org. Alternatively, their contact information is as follows:

New England Tropical Conservatory
P.O. Box 4715
Bennington, VT 05201
802-447-7419 

PROGRAMS AND COURSES

BEYOND KOI: The Ecosystem Created in a Water Garden HOR 0405

Co-sponsored with the Garden Club of the Back Bay
Wednesday, March 24, 2004

Greenhouse Reception 9:45 a.m.; Program 10:30 a.m.
Wellesley College Botanic Gardens' Visitors Center
Lecturer: Paul Trudeau

The sound and sight of water delights and relaxes us as well as welcoming birds and other life forms (fish, snails, frogs, etc.). For more than 19 years Paul Trudeau, owner of Hardwicke Gardens Statuary and Water Garden Center (www.hardwickegardens.com) and frequent New England Spring Flower Show exhibitor, has offered advice on the creation and maintenance of waterfalls and water gardens. What makes his approach special is that he creates as natural an ecosystem as possible. Whether you have or desire a water garden in small tub set on a terrace or a pond as the focal point for the larger landscape, Paul's talk will inspire you.
Members \$15 / Non-members \$18

LANDSCAPING WITH MEDICINAL PLANTS: Healing our Bodies, Healing the Earth

HOR 0406

Thursday, April 22, 2004, 7:00–8:30 p.m.

Co-sponsored with the New England Wildflower Society
Wellesley College Botanic Gardens' Visitors Center
Lecturer: Corinne Martin

Medicinal plants have always been an integral part of our health history. Approximately 2/3 of the world's population uses medicinal herbs as a primary method of healing. As use of wild medicinal plants increases in this country, we have an opportunity as gardeners and landscapers to help heighten awareness of the usefulness of wild plants in everyday health, and to help preserve at-risk medicinal plants in our own gardens and landscapes. Corinne Martin's lecture will focus on the use of medicinal plants, commonly used herbs with their medicinal properties and their status in the wild (with slides), and resources available for those interested in cultivating herbs.

Ms. Martin has 25 years experience with medicinal herbs, both as a clinical herbalist and an amateur naturalist. With a Master's degree in Applied Anthropology with concentrations in Ethnobotany and Sustainable Community, Corinne offers herbal consultations, slide lectures, and herb walks, and has written numerous articles and a book on the use of medicinal plants. She teaches integrative medicine studies at the University of Southern Maine's College of Nursing, in addition to writing a monthly column for the magazine "People, Places and Plants."

Members \$15 / Non-Members \$18

TRIP TO FOREST HILLS CEMETERY, Jamaica Plain TVL 0401

Monday, May 3, 2004, 9:00 a.m.–2:30 p.m.

Meet at Wellesley College Gray Lot to Carpool

Join us as we journey to Forest Hills Cemetery, one of the Boston area's best kept secret gardens. Founded by H.A.S. Dearborn, first President of the Massachusetts Horticultural Society and co-founder of Mt. Auburn Cemetery, the cemetery is filled with magnificent specimen trees and works of art by some of the most important New England artists of the last two hundred years. In addition to visiting Forest Hills' working greenhouses full of thousands of annuals ready for Memorial Day planting, we will walk to Lake Hibiscus, pausing to view the marvelous sculpture of specific 19th c. artists. We shall visit the imposing obelisk of Marshall Pinckney Wilder, the hybridizer of the Wilder Rose and a co-founder of the Massachusetts Horticultural Society in 1829 along with Dearborn. We'll meander along the paths, pausing to see some favorite monuments of Daniel Chester French, ee cummings' modest grave, and the welcoming Reece memorial by William Partridge. We will also see the contemporary bronze "The Sentinel", by Fern Cunningham. Forest Hills, a green oasis in the city, is an adventure in history, landscape and art. For those who wish to eat before heading home, we are going Dutch treat for lunch to nearby Doyle's Café.

Members \$15 / Non-Members \$18

WALK THROUGH THE HUNNEWELL PINETUM HOR 0407

Meet at the Wellesley College Botanic Gardens Visitor Center

Monday, May 10, 2004, 1:30 p.m.–3:30 p.m.

Leader: David Dusenbury

The Pinetum on the Hunnewell Estate was officially started in 1866 by Horatio Hollis Hunnewell, the founder and creator of the estate. The cultivation and stewardship of this world-class tree collection has continued through four generations of the Hunnewell family to the present day. The ten acres of the Pinetum include more than 350 specimen conifers representing approximately 150 different varieties ranging in age from a few years to over 140 years old. A few of the many highlights are spectacular mature Sargent's Weeping Hemlock, Cedar of Lebanon, and Dawn Redwood. David Dusenbury, Hunnewell Estate Horticulturist/Superintendent, will lead us on this fascinating walk.

Members \$ 15 / Non-Members \$18

**For more information, visit our web site: www.wellesley.edu/FOH
or call WCFH at 781-283-3094
or e-mail us at horticulture@wellesley.edu**

**THE LANDSCAPE IN SPRING:
A Study in Natural Settings**

Wellesley College Botanic Gardens' Visitors Center

Spring 2004

WCC 0403

Wednesdays 12:30–3:30 p.m.

May 5, 12, 19, 26; June 2, 9, 16, 2004

Susan Swinand offers this seven session watercolor course for intermediate and advanced levels which covers color, direction of natural light and cast shadows, elements of atmosphere and linear perspective, simplifying to suggest complex masses, and modeling form with light and color. Participants will have private study segments in the ideal setting of the College's Hunnewell Arboretum and Alexandra Botanic Garden.

Members \$165 / Non-Members \$195

**WELLESLEY COLLEGE
FRIENDS OF HORTICULTURE
ANNUAL MEETING**

***Diversifying your garden:
Pretty plants with Multiple Identities***

with Erin Goergen

Biological Sciences Laboratory Assistant

Thursday, May 13, 2004

4 p.m. – 5:30 p.m.

4:00 p.m. — Reception — Visitor Center

4:30 p.m. — Program — Science Center

When we first start to garden, we revel in the sheer joy of an aesthetically pleasing display. With the maturation of our horticultural efforts, we discover many of the nuances of modern gardening — integrated pest management, sustainable design, low maintenance, drought tolerance, proper soil composition — to name a few.

Historically, plants have played many roles. Erin Goergen will take us beyond “Right Plant / Right Place” all the way to “Right Use.” She enlighten us about plants that can be grown in NE gardens but have more uses (ie: medicinal, culinary, cultural, religious, etc. value in addition to horticultural) than many of the more commonly used, showy garden plants. We may never look at our plants in the quite same way again!

Free for Members; Non-Members \$5

Plan to make an evening of it and make your dinner reservations at the College Club! For reservations, call 781-283-2700.

**WELLESLEY COLLEGE
FRIENDS OF HORTICULTURE**

Programs, Courses and Travel Spring 2004

www.wellesley.edu/FOH

email: horticulture@wellesley.edu

office: 781-283-3094

Please print and fill out this registration form.

Make your check payable to:

Wellesley College Friends of Horticulture

Mail to:

Wellesley College Friends of Horticulture

106 Central Street

Wellesley, MA 02481-8203

NAME: _____

ADDRESS: _____

PHONE: HOME _____

PHONE: WORK _____

E-MAIL _____

If applicable: Wellesley College Class of _____

___ I would like information on the
Friends of Horticulture volunteer program.

MEMBERSHIP IN THE FRIENDS OF HORTICULTURE
(for the academic year July 2003-June 2004)

Young Alum:	\$15	Donor:	\$250
Regular:	\$35	Supporter:	\$500
Contributor:	\$50	Sustainer:	Over \$500
Sponsor:	\$100		

MEMBERSHIP TOTAL _____
(Separate check, please)

BEYOND KOI:

THE ECOSYSTEM OF A WATER GARDEN

HOR 0405 ___ Wednesday, March 24, M \$15/NM \$18

LANDSCAPING WITH MEDICINAL PLANTS:

CORINNE MARTIN

HOR 0406 ___ Thursday, April 22, M \$15/NM \$18

TRIP TO FOREST HILLS CEMETERY

TVL 0401 ___ Monday, May 3, M \$15/NM \$18

A WALK THROUGH THE HUNNEWELL PINETUM:

HOR 0407 ___ Monday, May 10, M \$15/NM \$18

WCFH ANNUAL MEETING

HOR 04AM ___ Thursday, May 13, M Free/NM \$5

THE LANDSCAPE IN SPRING:

A STUDY IN NATURAL SETTINGS

WCS 0403 ___ Spring 2004, M \$165/NM \$195

PROGRAM TOTAL _____



WELLESLEY COLLEGE
Friends of Horticulture
Science Center
106 Central Street
Wellesley, MA 02481-8203

Non Profit Org
U S Postage
PAID
Boston, MA
Permit No 12548