



Wellesley College Friends of Horticulture

SPRING 2005 NEWS

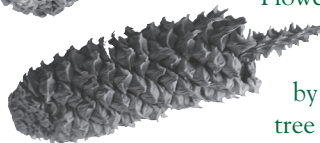
GYMNOSPERMS: The Naked Truth

by Carol Govan and Gail Kahn, WCFH Docents

Gymnosperms are a group of seed-bearing, vascular plants that represent an evolutionary milestone between spore-bearing ferns and flowering angiosperms. The name "gymnosperm" derives from the Greek words *gymnos* (naked) and *sperma* (seed), referring to the fact that the immature seeds are (here's the naked part) exposed when pollinated. Cones or fleshy seed coats protect the seeds of gymnosperms; they are not enclosed in fruit as are the seeds of angiosperms (flowering plants).

Formerly, plants were categorized by their morphological properties (i.e. what they looked like). Now they are classified based on their evolutionary relationships (Cladistics.) An extinct group of plants called **progymnosperms** were woody plants like gymnosperms but similar to ferns in that they released spores instead of producing seeds. As the name implies, this group of plants is an evolutionary ancestor of gymnosperms, and represents a major link in the transition from spore-bearing to seed-producing plants. Some gymnosperms, for instance the Gnetophyta, are evolutionarily closer to flowering plants than they are to other gymnosperms. Though a gymnosperm is now more of a descriptive term than a basis of plant classification, all have **seeds** (not spores) and are **woody** (not herbaceous) to

Cladistics (or phylogenetic systematics) is a branch of biology that categorizes plants.



support a **vascular system** of conducting tissues for water (**xylem**) and sugars (**phloem**) so they can grow taller and compete for sunlight.

The development of seeds allowed gymnosperms to inhabit more land habitats than ferns since seeds, unlike spores, have a protective covering and a supply of food. Approximately 144 million years ago, gymnosperms were the dominant land plants. Just as they dominated ferns in their heyday, gymnosperms in turn were unable to compete with the angiosperm's shorter life cycle. Gymnosperms are slow to reproduce: a year may pass between pollination and fertilization, and the seed may require three years or more to mature. Angiosperms usually reproduce more rapidly, which is a competitive advantage in surviving the challenges of changing environments. One possible explanation for the extinction of dinosaur species 65 million years ago is that the slow-growing gymnosperms could not keep up with the appetites of the giant herbivorous dinosaurs.

Flowering plants began to dominate the ecological niches left by the once-prevalent tree ferns, conifers and cycads that the dinosaurs consumed.

The major climatic changes of this period also resulted in a competitive advantage for flowering plants. Today gymnosperms represent only 15 families,



Dioon spinulosum, one of two mature cycads that dominate the west end of Wet Tropic House.

75-80 genera and 820 species. Compare this to the angiosperms' 257,400 species in 13,678 genera and 450 families.

Gymnosperms grow throughout most of the world and can be the dominant vegetation in many colder and arctic regions because many are adapted to conserving water during periods of frozen ground. Their leaves are covered with a heavy, waxy cuticle, and pores (stomata) are sunken below the leaf surface, both of which decrease the rate of water evaporation or transpiration. They include the tallest and longest living individual plants: bristle cone pines can live for over 4,000 years, and giant redwoods can grow over 300 feet tall.

We have all of the four divisions of gymnosperms represented in the Wellesley College Botanic Gardens: Coniferophyta (conifers), Cycadophyta (cycads), Ginkgophyta (*Ginkgo biloba*), and Gnetophyta (Mormon tea or ephedra).

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Notes from the Director

by Dr. Duncan Himmelman, Director
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Mission Statement

"The Wellesley College Botanic Gardens are dedicated to promoting the value of plant diversity through exceptional education, interpretation, research and public outreach."

The Blizzard of 2005 resulted in some of the most picturesque scenery in the Gardens in years! Yes, it also left us beneath two feet of snow, making it difficult to maneuver our way to the Gardens. But the warm refuge provided by the Ferguson Greenhouses made the effort worth it. The houses held up admirably under the snow load, and the plants made it through unscathed. This was good news, considering the leak that erupted in the steam pipes in the Cryptogam House the prior week as the temperatures plummeted! Thankfully, the pipe fitters came in and repaired it before any damage to the plants could occur. With a mere one inch of double-paned glass standing between life and death for the tropical ferns, this event reminded us of how important the structural integrity of the greenhouses is to our invaluable collection of plants. Looking to the future, the Greenhouse Planning Study done in 2003 provides the basis for bringing new life to the Ferguson Greenhouses, including an overhaul of all



Farewell Tea in the Visitor Center. Duncan Himmelman in the center flanked on left by WCBG Senior Horticulturist Tony Antonucci and on right by WCBG Horticulturist David Sommers.

the structural and mechanical elements, thus ensuring the continued legacy of this important component of the Wellesley College Botanic Gardens for students, faculty, staff, and area visitors.

Reflecting on other, less stressful events of the past several months, I realize how quickly time flies by yet how much progress we have made here at the Gardens within that time. The plants in the Ferguson Greenhouses have been successfully reorganized to underscore a stronger vision for the collections: *economically important plants from around the world*. The Hydrophyte House has been embellished with water lilies, taro, and species of bamboo that were not previously included. The annual chrysanthemum display was the best it's been in years according to comments from both visitors and Friends of Horticulture. Wellesley College fine arts classes, public tours and educational programs continue to fill the Ferguson Greenhouses with excited "plant-speak" on a daily basis. All of this vibrant activity emphasizes the value of the Gardens to the College and greater Wellesley communities.

Supporting these wonderful programs requires many hours of dedicated staff and volunteer time. To this end, the Friends have worked unstintingly to develop a broader base of assistance through both "people power" and educational materials. This fall we offered a third season of the revised Docent Training Program that has "graduated" approximately 25 new members since 2002. These men and women are producing exciting new resources to serve the unique needs of

our varied constituency. When you next visit the Gardens, be sure to stop and read the *Floraphiles* plant profiles, check out the *Plants in Bloom* board and use the new *Biomes and Habitats of the WCBG* guides as you explore the greenhouses, Hunnewell Arboretum and Alexandra Gardens. Through these fine efforts we are compiling a core of digital photographs and plant information of the Gardens that will eventually be reflected on the Friends' website and new Visitor Center displays. All of this first-rate work underscores the significant role our Friends play in "Making A Difference With Plants" and, figuratively speaking, growing the Gardens!

The years ahead will certainly be ones of continued growth and development for all aspects of the WCBG. I am pleased to have been here to build the foundation for much of this anticipated change, one of the mandates of the directorship which I undertook when I started in the summer of 2001. Personally, as I write this, I am on the cusp of moving along in my career to a new, creatively challenging position outside of the College. Though sad to be leaving, I have truly enjoyed sharing the energy, enthusiasm and commitment of the Friends to these cherished Gardens. My passion for all things horticultural has been reflected in theirs, serving as inspiration for me to work diligently at improving the Gardens. The Friends are a strong, focused group that is fully capable of generating new ideas and goals to enhance their role in the Gardens and achieving them through thoughtful creativity. Thank you all for your kind words and good wishes! I have taken great pleasure in working with you, and will sincerely miss my community of people here at the College and in the surrounding area. I wish you well as you move forward to a robust and rewarding future! I leave you with the following quote:

"A garden is never so good as it will be next year."

THOMAS COOPER 

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Spring Fling

by Nancy Dean Kingman '53

Spring comes early to Wellesley College's Margaret C. Ferguson Greenhouses. During February and March, the display house is awash with scents and sights of flowering plants. Various species of blooming narcissi, crocus, hyacinths, tulips, lilies and amaryllis crowd greenhouse benches—a certain spring tonic for the winter-weary visitors. While these hardy bulbs are natives of the Mediterranean area and central Asia, they are often planted in New England gardens. Adapted to alternating periods of hot and cold, wet and dry—in other words, temperate regions such as Wellesley, MA—they thrive here and have become a regional identifier for Spring's arrival.

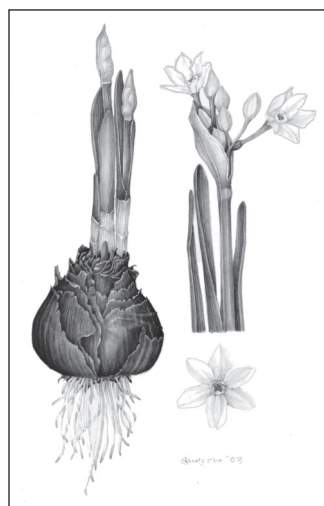
The word “bulb” is used loosely to refer to plants with swollen food storage organs at or below soil level. The true bulbs—such as narcissi, hyacinths, and tulips—are composed of vertical

structures (modified leaves) attached to a flat basal plate that actually is the stem from which the roots grow downwards. A papery outer cover protects the bulb. They are members of the Lily family along with lilies and muscari (Grape Hyacinths). Lilies, by the way, do not have that familiar papery cover for their bulb segments.

Crocuses, on the other hand, belong to the Iris family. They grow from corms; solid, swollen, vertical bulb-like stems; similar to iris rhizomes in purpose, but not in shape or location in the soil. Corms are annuals. After flowering they wither away, leaving a tiny new corm to bloom next year.

In order to initiate early growth and flowering, Wellesley's hardy bulbs are potted up and exposed to a false winter (a process called “forcing”.) For this process the WCBG staff uses shallow pots specially designed for bulbs filled with Pro-Mix BRK, a commercial mixture of peat moss, perlite, fine pine bark and lime. The pots are watered well before going into cold frames located between the greenhouse ranges. Buried under a thick layer of peat to maintain moisture and an even temperature for their winter quarters, they spend about 12 weeks growing roots and starting to sprout leaves. Shade cloth covers the cold frames which are open, unless precipitation or extreme temperatures are forecast. The staff monitors the pots for squirrel invasions, watering needs, and temperature at soil level—about 38 degrees Fahrenheit is best. When the bulbs sprout, they are moved into the small, old greenhouse, known as the Annex, where their leaves and stems “green up” before going on display.

These spring beauties share another similarity. They belong to the group of plants known as monocots—plants



Narcissus by Sarah Roche

with one seed leaf or cotyledon. Like grasses, orchids, philodendron, and spiderwort, they show several similar, specific characteristics. Look closely and you'll see flower parts in threes, or multiples thereof, and leaves clasping stems with, usually, parallel veins.

So important are spring bulbs to us they have appeared for hundreds of years in mythology, literature and song.

- A Greek myth tells of Hyacinthus, the beautiful youth loved by Apollo. Unfortunately, the young man died when struck by a discus, but his spilled blood became the flowers named for him.
- Wordsworth wrote that when remembering “a host of golden daffodils,” his “heart with pleasure fills, and dances with the daffodils.”
- Many of us have sung the Gilbert and Sullivan ditty from the Mikado: ‘The flowers that bloom in the spring tra, la...
- Then there was “Tulipomania” in the 17th century when tulips became “the supreme status symbols” and cost a fortune, literally.

And finally, this favorite that gets me every time I say it or read it:

- Hippocrates vowed that if he had two loaves of bread, he would “sell one to buy white hyacinths to feed my soul.”

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With a bit of autumn planning, you can enjoy your own spring magic show if you can't visit Wellesley's. There are many print sources of information as well as many internet Web pages devoted to the subject. A few tips:

- Soil mix should be moisture retentive but well draining, and pots should be roomy enough to allow for root development.
- Most important is an evenly cool location—refrigerator; garage, bulkhead, or hole in the ground. Should you choose to dig a hole, be sure to insulate the pots well with a thick layer of hay or leaves placed over them and marked by a stake that will show above the snow. You don't want to use a pick ax to retrieve your treasure from the frozen earth!
- After the cool period, place the pots out of the sun to allow the leaves to turn green slowly. Then give them all the light you can provide.
- Once in flower, enjoy them wherever you want a spot of spring.

The Healing Garden

by Betsy Tyson-Smith
Executive Director, Virginia Thurston Healing Garden

October 2004 was designated as “Breast Cancer Awareness Month” at Wellesley College. Across campus a variety of special events featured speakers connected in some way to breast cancer. One program, hosted by the Friends of Horticulture in the Visitor Center’s Creighton Room, was given by Betsy Tyson-Smith, M.A., Executive Director, Co-Founder of the Virginia Thurston Healing Garden, Inc., a non-profit organization offering a community of support for those experiencing breast cancer with no financial barriers to care. The Healing Garden is located in Harvard, MA.

I met Ginny Thurston in 1992 at the breast cancer support group I facilitated at the local hospital, of which she was a member until she died in 1999. When I asked her what she did to distract herself during the seven years of cancer treatments she told me she had a “little garden she enjoyed weeding and planting.” A modest statement, as usual. Her garden truly was a healing place for her.

Virginia and Bill Thurston bought the property in Harvard, MA, in 1953, and basically planned the acreage to include several unique gardens. Ginny was very involved in the many community organizations of Harvard, but gardening was her passion. She was president of the Landscape Design Critics Council, and a longtime member and a president of the Garden Club of Harvard. She became president of Massachusetts State Garden Clubs as well as NE regional director, and a trustee of the MA Horticultural and of the Worcester County Horticultural Society.

The Thurston’s ten acres of gardens were very well known in the area and a favorite touring spot. Highlights include:

- Meditation Garden, surrounded by a hand-made bamboo fence, with a small trickling fountain and a huge quartz rock upon which to gaze;
- Perennial beds featuring a large round stone fountain surrounded by purple Japanese iris and populated by dear little frogs;
- Wisteria trained into a magnificent tree form;

- A koi pond with surrounds of cattails, rushes, lily pads and azaleas all benefiting from the cascade waterfall at one side;
- A gazebo that seats a small group for iced tea, cookies and conversation;
- A shade garden that blooms all white in spring.... and more.

When I was asked by Bill Thurston to plan the concept of the Healing Garden in honor of his wife Ginny, the mission came clear very quickly: “A community of support for women with breast cancer, with no financial barriers to treatment, in a healing garden environment.” The Garden provides the connections women need to empower them to cope well with the experience of breast cancer. Our therapists mainly volunteer their services so everyone has access to care.

For our clients experiencing breast cancer, the gardens provide the only constancy we can take for granted: nature, daybreak and sunset, the seasons, growth, renewal, harmony and safety. I cannot stress enough the value of an environment such as this for healing. There is so much magic in nature’s beauty, and so much healing potential for the soul. The Healing Garden is unique in being able to integrate this type of environment into our programs, to offer these services here with no financial barriers. Our clients are encouraged to wander, pick, plant, prune and weed, if they wish. In addition, they meet in the gardens—for picnics, walks, yoga classes and many conversations. I have numerous letters from clients who deeply

INFORMATION ABOUT THE HEALING GARDEN

Location: 145 Bolton Road, Harvard

Mailing address: PO Box 145, Harvard, MA 01451

Services: Meditation training, acupuncture, reiki, massage, yoga, therapeutic touch; counseling for individuals, couples, children; groups for those in treatment, those finished with treatment and those with cancer spread or recurrence; workshops for caregivers, professionals (CEUs), gardening “as therapy.”


Web site: www.healinggarden.net. Visit our Web site often to learn of programs, volunteer opportunities, our therapists, reading suggestions, professional contacts, special workshops and directions. Visit Amazon.com through our site, or donate on line.

Contact: info@healinggarden.net to be on HG newsletter mailing list, to learn about the newly forming garden club, or opportunities to volunteer at the HG during special fundraisers.

Phone/Fax: 978.456.3532; 978.456.2302

appreciate the availability of nature’s loveliness and its impact upon them. Someday we will have a greenhouse, so we can work in nature all year round.

We offer support groups, and individual, couples and family counseling. In addition to this psychosocial support, we provide specific complementary therapies that are complementary to and integrated with standard medical treatment for breast cancer, offering help for side effects of treatment as well as fostering a higher quality of life. (See sidebar on right for more details on services.)

The uniqueness of the Healing Garden is in this combination of elements, for it provides a menu of services, at low to no cost, to women who are walking the long road through breast cancer. Thanks to Ginny and Bill there is a Healing Garden, a place providing support and teaching a positive adaptation to breast cancer, a special environment and a community of support, hope, education and beauty. 

ART AND BOTANY: A Winning Combination

Last winter's highly acclaimed juried exhibition *Native Flora: Botanical Treasures of the Northeastern Seaboard* at the South Shore Art Center (SSAC) in Cohasset, MA, featured scientifically accurate portraits of local native plants by 36 artists, many of whom study with Sarah Roche in WCFH sponsored botanical art classes.

In conjunction with the exhibit, the American Society of Botanical Artists (ASBA) awarded an educational grant to SSAC for development and implementation of two-session workshops co-focused on botanical art and native plants for 120 local middle school students. This integration of art and science in the school curriculum allowed the students to learn about botanical art while exploring connections between art and science and improving observation skills. The first session consists of a slide presentation on the history of botanical illustration, a gallery tour with show curator Sarah Roche and a botanical painting demonstration.

During the second session's extensive workshop, the students participate in a hands-on drawing and observation workshop on oak twigs, leaves and plants led by Carol Govan, WCFH Docent trainer and field botany teacher, and ably assisted by artists Julie Sims Messenger, Karyn Kouloupoulos and Jeanne M. Kunze.

To prepare for the workshop, Carol held a "Train the Trainer" exercise in the Visitor Center and invited WCFH volunteers and art students to sample the program's activities before signing up to assist with the workshops. During a fun packed two hours, twenty adults made strides towards: "Preventing Plant Blindness" by discovering some special plants and their winter adaptations. The exercises involved:

- looking very closely at oak twigs and several species of dried leaves,
- observing the stages of leaf decomposition,



At the South Shore Arts Center, enthusiastic students carefully observing oak twigs.

- studying tropical leaves to understand the difference between plants in the tropics and plants in our temperate forests,
- and, in order to better "see" an observation, sketching all of the above.

The Friends of Horticulture is proud to partner with the South Shore Art Center, Sarah Roche, and Carol Govan in support of this unique educational outreach activity for local students. Congratulations to all who participated in the workshops and exhibited in the show. 

Drawing in the Ferguson Greenhouses


by Alexandra Roy '08



Frequently, the Ferguson Greenhouses host Wellesley College art classes. The students are lively and excited as they observe, draw and paint. This on-location exploration of plants using an artist's eye leads to a great appreciation of the important role plants play in our world. Alexandra's diptych is the vertical desert scene. We thank her for sharing her greenhouse experience with us.

I am a student in Professor Joel Janowitz's Drawing 1 class. This course is an introduction to drawing and explores a mixture of techniques such as mark making through lines, shapes, forms, values, composition and perspective. We use a variety of tools such as charcoal, ink, pencil and collage. So far, we have been able to apply what we have learned by drawing still lifes, buildings, plants, portraits and live models. We have worked in the classroom, in our rooms, and outdoors.

Our most recent project has been to draw the plants inside the Wellesley College Greenhouses and also to focus on its architectural structure.

The first time that we visited the greenhouse as a class, we each chose a plant to focus on and draw it using charcoal. Our homework was to go back into the Greenhouses and draw whatever was directly next to, above or below our chosen plant. These two drawings would then combine to form a diptych. This has been my favorite project because of the energy that the Greenhouses provide through its large collection of plants. Working amongst so many beautiful plants was very stimulating and inspiring. It was also a lot of fun to see the result of the combination of our two drawings because originally we had started without knowing that it was going to become a diptych. 

GYMNOSPERMS *continued from page 1*

Conifers

Division: *Coniferophyta*

Class: *Pinopsida*

Order: *Pinales*

Conifers represent the largest and most economically important group of extant gymnosperms. They bear cones as opposed to flowers and fruit. Some, like juniper fruit look like “berries” but are really fleshy cones. Many conifers are evergreen, but a few drop their leaves. Currently, scientists classify this group into 8 families and about 50 genera. Only 6 families are in the WCBG collection.

- **Cupressaceae.** The Cypress/Cedar family has no protective buds like those usually seen on most hardy trees in our temperate zone. Their leaf tips grow new leaves the way many tropical trees do but not when the ground is frozen. It's fun to try and find the male and female cones that sometimes look like buds.

Junipers *Juniperus*: dioecious where the male and female cones are on different trees. There are a male and female native **Red Cedar** *J. virginiana* right outside the Visitor Center door. Others in the WCBG are: *J. chinensis*, *J. horizontalis*, *J. sabina*, and *J. scopulorum*.

Cedar of Lebanon

Cedrus. Ours is at least 30 years old but has yet to produce cones.

This tree, mentioned in the Bible, is located in the wedding area of the Hunnewell Arboretum.

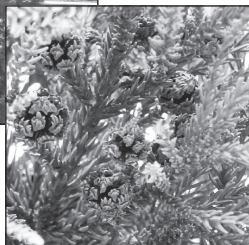
False Cypress/Cedars *Chamaecyparis*. We have a several collections of these throughout the Botanic Gardens, some adjacent to the bridge by the waterfall, others on Cedar Knoll and more over by Rte 135. *C.*



Male cones



Cryptomeria japonica



Female cones

lawsoniana, *C. nootkatensis*, *C. obtuse*, *C. pisifera*, *C. calyculata* and the **Atlantic White Cedar** *C. thyoides* located near the large Tulip Tree.

Arborvitae *Thuja occidentalis* and *T. plicata* are beautiful large trees with flat sprays of scaly leaves. Our *Thuja plicata* is located next to the Visitor Center, near the gravel path down to the parking lot.

Italian Cypress *Cupressus sempervirens*. Del Nickerson, former Head of the Greenhouse, received several seeds gathered from the Temple of Delphi in Greece and planted some outside and two inside. The outdoor trees didn't survive our New England winters but two now thrive over the door to the Tropical House in our Seasonal Display /Cool Temperate House. You can always find round female cones on them.

- **Taxodiaceae**, Swamp Cypress Family (sometimes included in the Cupressaceae Family)

Dawn Redwood *Metasequoia glyptostroboides*. A deciduous conifer that was thought to be extinct until a Chinese scientist discovered a living tree in China in 1946. The Arnold Arboretum contributed funds to collect seed and distributed it widely. This large tree across from the Tulip Tree is was one of the first planted at that time.

Cypress *Taxodium*.

Deciduous shoots. **Bald Cypress** *T. distichum* (our large northern-growing tree does not have the species trademark “knees”) is north of Paramecium Pond.

Japanese Cedar

Cryptomeria japonica. A large tree dominates the Cameron Garden outside the Visitor Center. You

can always find male and female cones on this evergreen conifer.

Umbrella Pine *Sciadopitys*

verticillata. Native to Japan, this species has evergreen needles that look like green plastic umbrella spokes. We have a small one below the bench on the second landing of the Hunnewell Arboretum steps.



Cones of Norway Spruce, *Picea abies*, by Karyn Koulopous

- **Pinaceae**, Pine Family

Spruces *Picea*.

Norway Spruce *Picea abies*, **White Spruce** *P. glauca*, **Oriental Spruce** *P. orientalis*, **Blue or Colorado Spruce** *P. pungens*, are in the Hunnewell Arboretum.

Firs *Abies*. It's easy to tell the firs from the spruces even though they look alike and are often found together in the same habitats. The firs are usually soft to touch while the spruces are prickly. The spruces also have a peg where the leaf attaches to the branch and the firs have a flat circle. If you see a mature cone persistent on the tree hanging down, it's a spruce; the firs bear their cones upright, which fall apart to release seeds. WCBG has **Balsam Fir** *Abies balsamea*, **Fraser Fir** *A. fraseri*, and **Nikko Fir** *A. homolepis*, native to Japan. The difference between the Balsam Fir and the Fraser fir is mainly distribution: Balsam is native in more northern areas and Fraser is more southern. The Fraser Fir also has visible bract tips between the scales.

Larches *Larix*, deciduous conifers. *L. decidua* is native to Europe and *L. kaempferi* is native to Japan.

False Larch *Pseudolarix*. *P. kaempferi* is a huge tree with amazing cones that look like pineapples.

Hemlocks *Tsuga*. Plants are monoecious (male and female cones on same plant). We have *T. canadensis* and its cultivars, *T. diversifolia*, *T. sieboldii*,



Hemlock branch with cones, *Tsuga canadensis*, by Anita Sebastian

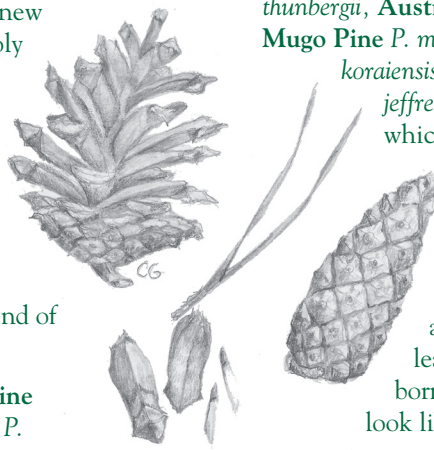
and are investigating new species that resist wooly adelgid, an insect decimating our native hemlocks.

Douglas fir

Pseudotsuga. There is an older one behind the observatory and a new one on the east end of the cedar knoll.

Pines *Pinus*. White Pine

P. strobus, **Pitch Pine** *P. rigida*, **Red Pine** *P. resinosa*, **Scots/Scotch Pine** *P. sylvestris*, **Japanese Black Pine** *P.*



Scotch Pine,
Pinus sylvestris,
by Carol Govan

thunbergii, **Austrian Pine** *P. nigra*, **Mugo Pine** *P. mugo*, **Korean Pine** *P. koraiensis*, **Jeffrey Pine** *P. jeffreyi*, and *P. bungeana* which has a wonderful bark similar to that of *Stewartia*.
• **Taxaceae, Taxus** or **Yews**. These shrubs or trees have shiny, alternate, simple, linear leaves. The pollen is borne in round cones that look like brains. The seeds are surrounded by a red fleshy aril that make it look like a fruit but of course they aren't. Many are represented

in the collections: *T. baccata*, *T. canadensis*, *T. cuspidata*, and many cultivars of *T. x media*. While often trimmed to form hedges, yews become quite large when left to grow naturally exposing an attractive structure and bark. Cephalotaxaceae is debated by scientists as being a distinct family; it is also commonly called "yew."

• **Podocarpaceae, Podocarpus**. Called **Plum Pine** because of a large blue-black to red aril that looks like a plum. Similar to *Taxus* (yew) but with larger leaves, *Podocarpus* species are widespread in the southern temperate and tropical areas. Podocarpaceae are the second largest conifer family, although far less well known than the pine and cypress families. Principally found in temperate tropical zones, the Podocarpaceae probably contain more species threatened by overcutting and habitat loss than any other conifer family. We have *Podocarpus macrophyllus* or **Buddhist Pine** in the center island of the Seasonal Display/ Cool Temperate House. *Decussocarpus rospigliosii*, an important Andean cloud forest species, is located in the Cryptogam House.

• **Araucariaceae, Agathis robusta** or **Queensland Kauri**, is an important source of timber and copal, a resin that makes a particularly hard varnish. Our specimen is located in the central bed of the Wet Tropic House. **Norfolk Island Pine, Araucaria excelsa**, native to Australia, is located in the Seasonal Display/ Cool Temperate House.



Pinus resinosa, Red Pine,
male cones.

Economic Uses of Conifers

Lumber: When the first settlers came to New England they saw white pine trees 150 feet tall. In proportion to its weight, pine is strong and ideal for the lengths needed for masts. John Wentworth, baron of the New Hampshire pineries, later to become the last royal governor of that colony, was made Surveyor General of His Majesty's Woods in America, with authority to mark every great Pine with a brand known as the **King's Broad Arrow** so the colonists knew these trees belonged to the King. The expropriation of white pine was a major factor for discontent in the American Revolution. The colonists wanted to clear their land for farming and use pines for lumber. Most of the large pines were cut and today you can't find many white pines over 60 feet.

Naval Stores: This is a term that refers products from conifer resin, such as pitch, originally used for caulking wooden naval ships. These products include **rosin**, a powder used by violinists, baseball players, and gymnasts, and **turpentine**, a liquid solvent. The tapping of pines and other conifers for resin has been practiced since biblical times. The wood, foliage and resin of a number of conifers yield essential oils, which are important ingredients in perfumes, disinfectants, and cleaning products.

Food: Pinaceae: Pine nuts are popular with humans in addition to birds and squirrels. The fleshy cones or "berries" of the juniper are used to flavor gin as well as sauerbraten and other traditional European dishes. Edible mushrooms harvested from conifer forests have become an important item in international trade and the Japanese matsutake mushroom, which grows in forests of *Pinus densiflora* in Japan, is presently regarded as the world's most expensive food.

Pencils: Early American pencils were made from Eastern Red Cedar, a strong, splinter-resistant wood. By the 1900s, pencil manufacturers used other cedar species.

Paper: Conifer woods are generally preferred because their water-conducting xylem vessels are longer than the xylem of hardwoods.

Landscaping and decoration: In addition to the many conifers sold as landscape specimens, conifer bonsai and topiary are popular specialty items. Christmas trees and evergreen boughs are an important seasonal industry. Pine mulch is a common gardening product.

Medicine: The anti-cancer agent **taxol** is found in the bark of *Taxus brevifolia*.

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WCFH Memorial Gift Fund

Recently, the WCFH Memorial Gift Fund was the recipient of gifts in memory of some wonderful folks who found pleasure in many facets of Wellesley College including its Botanic Gardens. Just as their spirits inspired others in personal horticultural passions, so will these memorial grants help Wellesley College students pursue new botanical passions – a continuing piece of their legacy. WCFH wants to share with you their stories as told by those who knew them best—their family members. Thanks to Liz Van Volkenburgh and Betsy Billington Howerton for sharing with our membership and to those who cared enough to send a special gift.



Jesse Weaver Brown '12
circa 1965

Dear Friends of Horticulture,

It is a great pleasure for us to have Jesse Weaver Brown remembered by Wellesley's Friends of Horticulture. Her passion for nature, botany, and teaching others will be honored by support for Wellesley students. I write to tell you about my grandmother, Jesse Sewell Weaver Brown, a graduate in Botany from Wellesley in 1912. I have asked my parents and siblings for their thoughts and put all that together here with my own recollections.

Jesse Sewell Weaver Brown was born in Louisville, Kentucky, the daughter and second child of Charles Parsons Weaver and Anna Mary Sewell Weaver. She graduated from Girls High School before matriculating at Wellesley. Evidently weak in Latin, she translated 'stabat mater' as 'there is the stabbed mother' on her entrance exam (she must have had redeeming features). At Wellesley she majored in Botany, took courses in religion and history, and had a lead part in one or more drama productions. She graduated in 1912, and taught for a couple of years afterward. While at Wellesley she visited her brother William Gaulbert Weaver, who was a cadet at the Military Academy at West Point and there she met his roommate, Albert Eger Brown, whom she married in 1914. The Browns had two children, Jean Fontaine (my mother) and Albert Eger Jr. Their family moved often being in the military, which, along with the wars (WWII and Korean) made gardening and botanizing difficult for Jesse Brown. Her daughter Jean remembers a lovely sunken garden at the side of their house in Grand Forks, North Dakota, into which her mother backed the car- thereby disrupting a stand of rhubarb. Also at that time, the Brown children's bedtime reading was 'How to know the wild flowers' although they much preferred 'Uncle Wiggly.'

When I was growing up, we often visited our Brown grandparents, whom we called Ma and Fa, at their home in Asheville, NC, and at their summerhouse in Highlands, NC. At those homes, my grandmother was finally able to garden, and botanize to her heart's content. They imparted to us their love of the outdoors, and a working naturalist knowledge. My sister Jesse remembers Ma's vast knowledge of stars, all the constellation names and where to find them at different times of the year. When we went out walking in the woods, Fa gave us advice on avoiding poisonous snakes and a snake stick, and Ma encouraged us to look for certain flowers in bloom. My brother recalls the garden in Asheville, and Ma's concern for the boxwood hedge lining the walk to the front door – over her objections, John insisted he needed to teach the dog how to jump the hedges, which he did only partly well leading to steady decline of the boxwood hedges during our visits. I remember that Ma had a copy of Gray's Manual of Botany on the side table in the living room. I think they let me read that book in lieu of conducting polite conversation during 'cocktails' (ginger ale and cranberry juice). It struck me as a most important book, and although it seems a bit strange thinking of it today, I am pretty sure that once I enrolled at Duke (where my mother graduated in 1937), the reason I became a Botany major had in part to do with the idea that I might finally be able to master that book. Alas, I turned out to be inept at remembering plant names, but my forte became fascination for how plants work, and asking questions about plant physiology. Luckily for me, Ma's classical interests in horticulture and botany were taken up by my mother, who enjoyed botanizing and took me through a number of botanical gardens and woods walks when I was growing up. Her passion and enthusiasm influenced my father and husband, who are plantsmen and gardeners, and especially my brother John, whose photographs of leaves and flowers grace our homes, and reminding us of his pleasure gardening with his wife Linda.

Jesse Weaver Brown gardened whenever it was possible; she was always interested in studying plants wherever she was. In addition, she was extremely well informed on a multitude of subjects, a fascinating dinner guest, one with an open and receptive mind to all kinds of people, one with a strong sense of honor as well as an understanding of human beings – a loving wife, mother and grandmother. We thank you for remembering her in these ways.

Elizabeth Van Volkenburgh
Professor of Biology, University of Washington

Liz Van Volkenburgh graduated with a B.S. in Botany from Duke in 1973, and received Ph.D. in Plant Physiology from the University of Washington in 1980. She is now a Professor of Biology at the UW specializing in the physiology of leaf growth. To learn more about Liz's research where "Plant physiology, electrophysiology, and physiological ecology are the topics we address. How do leaves grow? How do plants behave in adverse circumstances? Do plants have a 'nervous system'? These are our questions; come see how we go after them..." ... check out The Van Volkenburgh Lab's Web site <http://depts.washington.edu/vanvlab/>

Dear Friends –

Individual gifts were made to the Friends of Horticulture in memory of my mother, Jane Barcus Billington '37. She would just be pleased to know that in some small way she was helping to perpetuate your good work with Wellesley students.

While not a Wellesley graduate myself, I feel fortunate to have been surrounded by so many of my mother and my grandmother's Wellesley friends. The essence of Non Ministrari sed Ministrare abounded. She felt that Wellesley was a wonderful place to learn new things, try new things, meet people and expand one's horizons. As a young child, she took me to an open night at the Observatory where she as a college freshman had her eyes opened in so many ways. She felt that a Wellesley education prepared one for life.

Mother learned her love of gardening and horticulture from my grandmother, Corinne Locke Barcus Crane '06, an accomplished gardener. Mother had beautiful perennial beds and she found special delight in gifts of plants from friends' gardens. The *Colchicum autumnale* (fall crocus) and some of the lilies in my garden have been handed down from my grandmother to mother to me! Mother was a life long learner and was forever taking notes while watching PBS' "The Victory Garden."

I recall that Mom went on a number of Friends of Horticulture trips and enjoyed them very much. She also enjoyed meeting fellow Wellesley alumnae on these trips, and she found your newsletter informative. She loved visiting the Greenhouses and marveled at how the tropical plants thrived. We came even when Mother wasn't totally mobile and was using a walker in her last few years. It was great that even though the aisles are narrow, we seemed to manage navigating through. Getting out into such a beautiful, nature filled environment is so meaningful for individuals who spend much of their time indoors. And I think those experiences are appreciated at a heightened level – at least in Mom's case. We did enjoy the walk near the lake in front of the College Club and up towards the Chapel. Mother always thought Wellesley a wonderful refuge.

Kind regards,
Betsy Billington Howerton 



Jane Barcus Billington '37
in 1993

Watch our Fall Newsletter for an update on the Friends of Horticulture Memorial Books Gift Fund which assists in the acquisition of books and other library collection resources on botany and plant science, as well as the occasional botanical illustration title for the art collection.



If you would like to honor a special friend, who like Jane Barcus Billington and Jesse Weaver Brown, found the Wellesley College Botanic Gardens a special place, please consider a donation to the WCFH Memorial Gift Fund, which was established to honor the memory of those who were advocates of promoting education in horticulture and the botanical sciences. The gift funds supports plant science students through research grants and travel assistance to attend scientific meetings and underwrites the hiring of student interns who gain horticultural experience by working in the Wellesley College Botanic Gardens.

*Contributions may be sent to the Friends Office:
Wellesley College Friends of Horticulture
106 Central Street
Wellesley, MA 02481-8203*

*Please make your check payable to
"WCFH Memorial Gift Fund"*

HORTICULTURAL TIDBIT: Propagating Seed

by Maureen Bovet DS '92

For the home gardener and the professional alike, growing plants from seed is often a cost-wise necessity and preferable to purchasing seedlings or mature specimens. Here in the Ferguson Greenhouses, the WCBG staff gets busy propagating seed when:

- special collection species can only be acquired from seed provided by other botanic institutions,
- plants do not readily transplant or need growing conditions as rigorous as their eventual planting site,
- weather is not conducive to shipping live plant material,
- multiples of a single species are requested for the outdoor gardens, class use or research,
- replacement of larger growing specimens in WCBG Collections are needed to keep the species representative right-sized for a glasshouse,

- the Display House hosts an ahead-of-season flower show.

The specific conditions for germination are almost as varied as the seeds themselves. Staff research starts with seed packet information. Additional details come from reference books. Collected or swapped seeds seldom come with instructions and that is when reference books are handy.

Before germination some seeds require a cold or a warm dormancy, and some even require both warm and cold periods. Recently, the staff potted up seeds requiring sixty days of cold, moist stratification. These New England native plants—*Iris versicolor*, *Iris prismatica*, *Magnolia ashei*, and *Geranium maculatum*—will be used in the Hunnewell Arboretum and the Alexandra Botanic Garden to restore former colonies of native species crowded out by invasive species.

Several of the Display House spring show-stoppers such as Foxglove (*Digitalis purpurea*), Canterbury Bells (*Campanula medium*) and Columbine (*Aquilegia species*) are biennials. They germinate and grow the prior summer and then spend most of the winter resting in cold frames located between greenhouse ranges. Brought into the Annex Greenhouse's warmth, they revive and then move to the Display House once blooming starts.

Other seeds need to have the seed coat softened or broken. Frequently, this is done simply by soaking seeds in water. Morning Glory (*Ipomoea tricolor*) and Sweet Pea (*Lathyrus odoratus*) seeds should soak for several hours or overnight before planting. For tougher seed coats such as those of Carob (*Ceratonia siliqua*), scarification is necessary. Lightly filing the seed works just fine to break the seed coat.

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Blooming *Acacia* trees covered with delicately scented, soft-yellow inflorescences are a wonderful treat for winter-weary visitors. During a February 2004 visit to the Ferguson Greenhouses, David Stone, WC Trustee Emeritus, observed *Acacias* growing and blooming in the Display House. Mr. Stone was inspired to gift the WCBG seeds from his family's *Stone Acacias*—locally well-known as frequent stars of the New England Spring Flower Show and many other regional flower shows since the late 1940's. About fifty seeds from a variety of well-flowering species of the Australian native *Acacias* yielded a strong crop. Already the resulting seedlings are in larger pots and on their way to be a focal point of the WCBG Collection. Thank you Mr. Stone! ■

Hairy Wattle (*Acacia vestita*)
Knife Leaf Wattle (*Acacia cultriformis*)
Wattle (*Acacia uncinata*)
Golden Wattle (*Acacia pycnantha*)
Cootamundra wattle (*Acacia baileyana*)
Sydney Golden Wattle (*Acacia longifolia*)

While plant propagation is an ongoing team effort by the entire horticulturist staff, primary responsibility for this task falls to David Sommers, WCBG Horticulturist. During the four years David has worked at the Ferguson Greenhouses, he has continued his journey of learning. He does a lot of reading to increase his knowledge and soaks up the training he gets on the job, at conferences, and from specialized classes.



David Sommers and the *Acacia* seedlings.

As a young boy growing up in nearby Needham, David remembers a fascination with strawberry plants tended by his sister in their family's garden. The tasty results of that growing season probably helped start him on his passion for plants. Nearby Winslow Nursery also whet his appetite for the growing world.

While the healing and nurturing aspect of plant care is strongly attractive to David, the challenge of germinating seed holds a special thrill. David's curiosity has led many successful sowings. He fondly recalls raising Papaya (*Carica papaya*) with fruit ripening in under two years, Ponderosa lemon (*Citrus limon* 'Ponderosa'), a Coffee tree (*Coffea sp.*), and a tiny flowering *Hibiscus sp.* now blooming in the Warm Temperate House. ■

Cycads

Class: Cycadopsida

Order: Cycadales

Family: Cycadaceae

Latin: *Cycas*: a palm tree. (Although palm-like, these plants are not palms.)

Location: Wet Tropical House

Cycads evolved in the Carboniferous era and reached their peak in the Mesozoic era, often called the “Age of Cycads and Dinosaurs.” The fossil record indicates that cycads were globally distributed, extending from Alaska and Siberia to the Antarctic. Fossils have been found on every continent, a feat that was possible because of the generally warmer climate of the Mesozoic era, and higher moisture than today.

Cycads include 9 to 11 genera and 250 species in two families: Cycadaceae (*Cycas*), and Zamiaceae (*Stangeria*, *Bowenia*, *Ceratozamia*, *Dioon*, *Encephalartos*, *Macrozamia*, *Microcycas*, *Zamia*) found mainly in tropical or subtropical areas. Cycads are considered the most primitive of all the surviving gymnosperms. Although they are widely grown as landscape and indoor specimens,

many now face extinction in their native habitat. The only cycads native to the United States are several species of *Zamia*, possibly all variants of *Zamia integrifolia*, which grow in the sandy woods of Florida.

While often visually similar to palms and ferns, Cycads are very different: ferns have spores instead of seeds,

Economic Uses of Cycads

Although various cycad species have been used as food sources, most require extensive processing before being used as food as they contain many unique bioactive compounds and are known to be highly poisonous. Known as sago starch or Florida arrowroot, the starchy pith of Florida cycads was collected by Seminole Indians and used to make bread.

FROM THE WCBG FLORAPHILES VISITOR CENTER DISPLAY Cycads

What do you know about your family history? Can you trace your ancestors back 100 or even 200 years? Cycads are a group of plants whose ancestors we can trace back for 300 million years. That makes them one of the oldest families of plants in existence. Even though there are few species of cycads alive today, back in the Jurassic period (200 million years ago), cycads comprised 20% of all the plants that grew on the Earth. For this reason, the Jurassic is often called the Age of Cycads

At that time, the Earth was warmer than today, and cycads had a world-wide distribution, from Siberia to the Antarctic. Plant-eating dinosaurs munched on cycads, which may be why cycads developed tough, leathery leaves, spines, and poisonous roots and seeds: to discourage animals from eating them! Cycad leaf fossils have been dated to the time when the dinosaurs roamed the earth.

Like tree ferns and palm trees, cycads have a sturdy trunk topped by a crown of large compound leaves. But unlike ferns and palms, cycads are cone-bearing gymnosperms. Gymnosperms have an ancient type of plant reproduction, pre-dating the development of flowers. Conifers are another example of gymnosperms.

Cycads have a special set of roots that grow on and above the soil surface, called coralloid roots because they resemble coral. Coralloid roots are unique to cycads, and are of interest to scientists because they can fix nitrogen from the air. This ancient group of plants has a lot to teach us about plant evolution and adaptation.

and palms are angiosperms. Cycads are dioecious, with separate plants bearing male and female cones. They typically have tough, leathery leaves, which in many species bear thorns. Cycads are unique in possessing coralloid roots (so called because they look like coral). These adventitious roots host symbiotic cyanobacteria that fix atmospheric nitrogen, changing it to something the plants can absorb.

Cycads in our greenhouses include:

- **Sago Palm** *Cycas revoluta*. The largest of our cycads, located in the center bed of the Tropic House, is often said to look like a man with upraised arms. An original planting of Margaret Ferguson, one branch of this cycad became too tall and during Harriet Creighton's directorship was cut down for use at the Flower Show. At the time this was held at Raynham Greyhound Park, in a tent that was inflated by blowers. One night the blowers failed and the tent collapsed, but the Wellesley College cycad held the tent up.



- **Mexican Fern Palm** *Dioon edule*. (Pronunciation: dy-OH-awn; from the Greek dis (twice) and oon (egg); refers to the paired seeds.) Located on the north bench of the Tropic House, opposite the large coned cycad (*Dioon spinulosum*) growing in the center bed.

- **Gum Palm** *Dioon spinulosum*. This large specimen, growing to the northwest of the Sago Palm in the center bed of the Tropic House, is thought to be male because of the appearance of its cones.
- **Encephalartos ferox**. (Latin: ferox= fierce) Located in a pot between our large center-bed cycads, this Cycad has stiffly arching sharply spiny leaflets. It is a less thorny relative of *Encephalartos horridus*, a cycad species we had for 15 years in the Tropic House whose heavily armored leaves



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PROGRAMS AND COURSES

INSPIRED CONTAINERS with Alison Campbell

Saturday, May 21, 2005

HOR 0512

9:30 Registration; 10:00 a.m. – 12:00 p.m. Workshop

Wellesley College Botanic Gardens' Visitor Center

Bring your favorite container to this workshop and we will provide the plants, soil, fertilizer, and inspiration for you to come away with a winning container garden. While learning the tricks of the trade from Alison Campbell, a local professional landscape designer, you will create a dazzling autumn or summer arrangement suited to your own yard, front steps, patio, deck, or porch filled with an exciting array of fall plants. The skills Alison teaches you will easily carry through to containers gardens of spring and summer.

Alison and Molly Campbell are an award-winning mother-daughter team specializing in custom designed container gardens. Based in South Natick, their seasonally changing containers are featured at numerous retail stores and private homes around the Boston area. Their innovative use of plant materials and a strong eye for color and texture help to create memorable designs, each one as unique as the setting around it. Check them out on the Web: www.henandchick.com.

Class size is limited to 15 participants.

Containers should not to exceed 14" in diameter and should have drainage holes.

Members \$44.00 / Non-Members \$55.00

BEYOND THE GARDEN GATE:

The Life of Celia Laighton Thaxter

HOR 05FL

Co-sponsored with Friends of Wellesley College Library

Sunday, May 15, 2005

2:30 p.m. Reception

3:00 p.m. Book Talk

Wellesley College Collins Cinema

Come and hear Norma Mandel '55 speak on her book, *Beyond the Garden Gate: The Life of Celia Laighton Thaxter*. Thaxter (1835-1894) was raised on the Isles of Shoals off the New Hampshire Coast and became the hostess of a popular summer salon at her family resort on Appledore Island. In the winter, she lived in Boston where she was part of the extensive literary circle of Annie and James Fields, a publisher of authors such as Henry Wadsworth Longfellow and Nathaniel Hawthorne.

Members and Guests — No Fee



ON THE ROAD WITH THE FRIENDS OF HORTICULTURE

Mount Desert Island, Maine July 26-29, 2005

Join us as we journey by coach from Wellesley College to Maine for a four day exploration of Maine's extraordinary horticultural offerings. Our tour starts with a mid-day stop at the Costal Maine Botanic Gardens in Boothbay, a living museum of conservation, research and education.

Then we are off to Mount Desert Island to spend the next two days and three nights immersed in the horticultural glories of this special place. We look at what makes this island ecosystem unique and how it has been tamed and untamed. With Barbara Rappaport '44, a long-time Maine resident as our garden travel guru, we plan visits to premier public gardens as well as explorations of private gardens of Wellesley alumnae and friends.

Since garden trekkers are ever ready to see more, we plan to make a garden stop or two on our way back to the College on day four.

For more information contact the Friends' office: 781-283-3094 or horticulture@wellesley.edu

GROWING PARK STEWARDS IN THE CITY

Sunday, May 22, 2005

HOR 05AM

3:00 p.m. Arboretum Tours and Visitor Center Reception

4:00 p.m. Meeting and Program

Join the Friends as we continue to celebrate Wellesley Women in the World of Horticulture. Come and hear Wellesley class of 1981 Alumna Christine Poff describe her journey from psyche major to the Executive Director of the Franklin Park Coalition and her stops along the way. Then Christine will expound on her exciting work at this local park including restoring woodlands, creating educational venues, and involving neighborhoods. Although Franklin Park is not a "tended garden", the grounds are a cherished, Olmsted-designed green space so close to the city — a place for people from all walks of life to meet and share the outdoors.



WCFH and WCAB Members— Free--RSVP only/Guests \$5.

ART CLASSES

THE LANDSCAPE IN SPRING:

A Study in Natural Settings

WCC 0503

Wednesdays 12:30 – 3:30 p.m.

May 4, 11, 18, 25; June 8, 15, 22, 2005

Wellesley College Botanic Gardens' Visitor Center

This seven session watercolor course for intermediate and advanced levels 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 study segments in the ideal setting of the College's Hunnewell Arboretum and Alexandra Botanic Garden.

Sue Swinand, a visual artist and Magna Cum Laude graduate from Moore College of Art in Philadelphia, has taught painting at the Worcester Art Museum for over 15 years and has been an adjunct painting and design instructor at Clark University since 1992. She has been teaching at Wellesley College Botanic Gardens since 1998.

Seven Class Series: Members \$165 / Non-Members \$210

ADVANCED BOTANICAL ILLUSTRATION:

A Summer Tutorial with Linda Funk

BAC 0525

Monday, June 13 – Thursday, June 16, 2005

9:30 a.m. Registration; 10:00 a.m. – 4:00 p.m. Seminar

Wellesley College Botanic Gardens' Visitor Center

This course will cover all aspects of the traditional art of botanical watercolour drawing. Using live plant materials, instructional focus will include composition, observational skills and sketch development, and drybrush watercolour technique. Students will be encouraged to practice the skills and self-discipline required to produce drawings combining scientific precision and artistic beauty. There will be emphasis on process, not product, and on developing the individual's unique abilities, though we will work toward producing a finished drawing. Enrollment is limited to provide for individual attention.

Linda Funk is an artist with thirty years of experience in design and illustration. Specializing in pencil, drybrush watercolour, gouache and metalpointe drawing, she teaches at the New York Botanical Garden, College of the Atlantic, and the Farnsworth Museum of Art in Maine.

Class size is limited to 12 participants.

Bring your own lunch or walk to local shops

Members \$425 / Non-Members \$475

DRAWING SUMMER FLOWERS WITH COLORED PENCILS:

Seminar with Carol Ann Morley

BAC 0601

Tuesday, July 12 – Thursday, July 14, 2005

9:30 a.m. Registration; 10:00 a.m. – 4:00 p.m. Seminar
Wellesley College Botanic Gardens' Visitor Center

This introductory course on colored pencils will give you the opportunity to learn about the versatility of the medium. Using a wonderful color vocabulary, colored pencil incorporates aspects of both painting and drawing. You will learn some interesting pencil techniques including impressed line, sgraffito and burnishing as well as some basic color theory that will help you read the natural color of flowers and give botanical rendering form and visual depth. All levels of students welcome.

Carol Ann Morley is a freelance artist and illustrator specializing in drawings about nature. Her work is in private and public collections, including The Hunt Institute for Botanical Documentation and The Shirley Sherwood International Botanical Art Collection. Carol currently resides in New Hampshire and is the founder of the Botanical Art and Illustration Certificate Program at New York Botanical Garden.

Class size is limited to 12 participants.

Bring your own lunch or walk to local shops.

Members \$225 / Non-Members \$275

FLOREGIUM with Sarah Roche and Carol Govan

Tuesdays, August 9 and 16, 2005

BAC 0602

9:30 a.m. Registration; 10:00 a.m. – 3:00 p.m. Seminar

Wellesley College Botanic Gardens' Visitor Center

Observe botany in action in Wellesley College's meadows with Carol Govan, a naturalist with an extreme case of botanical enthusiasm, and then record what you see with pencil sketches and dry brush watercolor techniques under the guidance of Sarah Roche, botanical illustrator and teacher. At the end of our two days, we will have created a flora for the WCBG of the meadows in the Hunnewell Arboretum and Alexandra Botanic Garden.

Bring your own lunch or walk to local shops.

Limited to 15 participants.

Members \$60 / Non-Members \$75

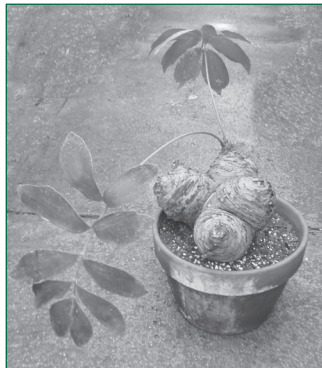
Check our Web site www.wellesley.edu/FOH

**or contact the office 781-283-3094 or via email horticulture@wellesley.edu
to be sent a program brochure about the rest of our programs.**

GYMNOSPERMS *continued from page 11*

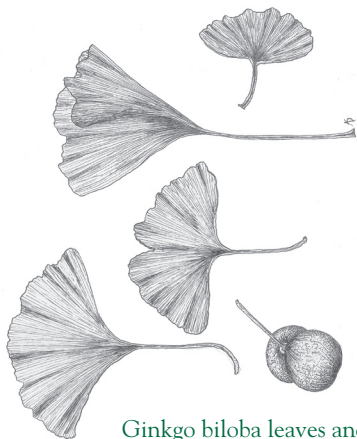
made it an unfriendly plant for a greenhouse setting.

- *Zamia wallisii*. Located on the bench next to *Monstera deliciosa* in the Tropic House. *Zamia* is unique among cycads in producing the largest leaflets. At one point, this particular plant produced seeds, a triumph for our WCBG horticultural staff as *Z. wallisii* is considered difficult to grow and rarely produces seed cones.



Ginkgo

Class: *Ginkgoopsida*
Order: *Gingales*
Family: *Ginkgoaceae*
Chinese: *Ginkyo* meaning “silver apricot” (gin=silver, kyo=apricot)
Location: Cool Temperate/Display House and in Hunnewell Arboretum



Ginkgo biloba leaves and fruit by Anita Sebastian

The ginkgo or maidenhair tree is a deciduous tree with fan-shaped leaves that turn a brilliant gold in the fall. The name “maidenhair” comes from its similarity of its leaves to the leaflets of the maidenhair fern (*Adiantum sp.*, found in the Fern/Propagation House). The leaves have a unique vein pattern called dichotomous venation, a primitive

vascular plant characteristic. Starting at the leaf stalk, the veins continuously divide in twos. *Ginkgo biloba* is the sole surviving species of order Ginkgoales,

a group of gymnosperms more ancient than conifers and first appearing 300 million years ago. Ginkgo species ranged throughout the temperate parts of the world, but became extinct except in China, and even there it is no longer found in its wild state. The extinction of its seed disperser (perhaps a dinosaur?) may have precipitated its decline.

The continued existence of *Ginkgo biloba* was due to its cultivation by Buddhist monks in Chinese monasteries, palaces, and temple gardens. First as a food source, the edible nuts came to be valued for their herbal properties. It was “discovered” by Western plant collectors in the 18th century, and quickly become a popular specimen tree in many parts of the world. Additionally, its tolerance of urban conditions has led to its being widely planted as a city street tree.

The ginkgo is dioecious: male and female reproductive structures carried on separate plants. The twinned orange-brown seeds have a large edible kernel surrounded by a fleshy seed coat, which decomposes at maturity and smells like rancid butter or old gym socks. For this reason, most ginkgoes planted today are male trees. All of the ginkgoes at Wellesley College are male. There is a ginkgo tree in the arboretum by Mirror Pond. There are a few in the greenhouse annex that go through winter dormancy outside before being brought inside to start new leaves for the students to examine.

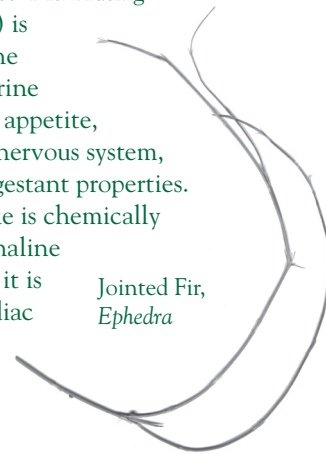
Gnetopsida

Division: *Gnetophyta*
Class: *Gnetopsida*
Order: *Gnetales*


Three families **Gnetaceae**, **Ephedraceae**, **Welwitschiaceae** (*Gnetum*, *Ephedra*, *Welwitschia*) are diverse and do not appear related. Only one specimen of

this class, a member of the Ephedraceae family, is current in the WCBG collections.

- **Ephedraceae:** **Mormon tea or joint fir** is the name given to several *Ephedra* species found in the Western United States. *Ephedra sp.* is in the Desert House: a grassy-looking low shrub with jointed green stems and simple, deciduous leaves. Ma Huang (*Ephedra sinica*) is the source of the alkaloid ephedrine that suppresses appetite, stimulates the nervous system, and has decongestant properties. Since ephedrine is chemically similar to adrenaline (epinephrine), it is a powerful cardiac stimulant. Because of its stimulating effect on the nervous system, ephedra was found in some popular weight loss and energy products. Pseudoephedrine is a chemical relative (isomer) of ephedrine that is much less of a stimulant and therefore a safer compound.



Jointed Fir,
Ephedra

- **Welwitschiaceae:** *Welwitschia* is a peculiar plant found in the Namib deserts of Africa named for its discoverer Austrian botanist Friedrich Welwitsch. Oldest living specimens are believed to be 1500 to 2000 years old. Based on its appearance and growth habit, it is considered one of the most bizarre plants on earth. It has a short woody trunk and produces only two leathery, strap-like leaves its entire life. These lie on the ground, growing from their bases as their ends get torn and battered by the wind and sand.
- **Gnetaceae:** *Gnetum* is a vine or small tree with opposite, simple, pinnately-veined leaves. This family is confusing to plant taxonomists because of the presence of flowers or flower-like structures, and is the reason that gymnosperm is more a descriptive term today. 

VISITORS' VOICES

by Mary Gottmann DS '98

Despite an early season snowstorm, the Ferguson Greenhouses' Display House wore its autumnal gown of chrysanthemums with elegance on the night of November 16 for WCFH's annual Pizza and Mums. Wellesley students strolled appreciatively through the candle lit Greenhouses. Here are some of their comments on the evening:

"The Greenhouse was absolutely breathtaking! I'm so glad I came; wonderful program."

—Elizabeth Fulham '07

I love coming to The Greenhouse, and like seeing events like this which show it off. The perfect thing for a cold night!"

—Darcy Hachley '07

"I love visiting The Greenhouse! I first came with my studio art class and have enjoyed visiting ever since. I heard about this event from a friend, and hope to attend in years to come. Thank you!"

—Kaitlyn Lucey '08

"This was great! I enjoyed looking at, not only the mums, but also the other plants in The Greenhouse. (I loved the pizza, too.)"

—Frances Pong '05

"I think everyone would be significantly happier if they came and hung out with the plants. Ferns don't tell you to do your homework."

—Julia Lord '07

And, one last succinct comment:

"I love pizza--and I love mums!"

—Michelle Kim '05

Plan a visit soon to the Greenhouses and the rest of The Wellesley College Botanic Garden—fabulous places to stroll for relaxation and nourishment of spirit. Choose to wander the lush indoor warmth of the Greenhouse ranges, to enjoy the beauty in our outdoor areas—or give yourself the benefit of enjoying both!

Colors in Winter

by Meira Ilana Appell, frequent WCBG visitor

Silent song vibrates with fervent energy
Moist bursts of purple framed in a scallop of green
Intersperse with thin stems and melancholy blossoms

Lavender snowflakes, prickly paddles of life,
Scarlet trumpets fall from honeysuckle

Magenta juice seeps into deep veins that tickle a
tattered edge

Felt like down covers sweet healing green

Mitt size sherbet flowers open to reveal horns of
bubble gum pink

Ruffled inner petals flow like tears of joy

In this fortress of rainbow energy, I can breathe the truth
of beauty

Allow it entrance as gratitude and affirmation of life

WELLESLEY COLLEGE FRIENDS OF HORTICULTURE

www.wellesley.edu/FOH email: horticulture@wellesley.edu
office: 781-283-3094

REGISTER FOR ALL PROGRAMS

Make your check(s) payable to:

Wellesley College Friends of Horticulture

Mail to:

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

NAME: _____

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MEMBERSHIP IN THE FRIENDS OF HORTICULTURE (for the academic year July 2004-June 2005)

Young Alum:	\$15	Donor:	\$250
Member:	\$50	Supporter:	\$500
Sponsor:	\$100	Sustainer:	\$1000 and beyond (thank you)

MEMBERSHIP TOTAL _____

(Separate check for membership, please, made payable to:
Wellesley College Friends of Horticulture)

INSPIRED CONTAINERS

HOR 0512__Saturday, May 21, 2005, M \$44/NM \$55

BEYOND THE GARDEN GATE

HOR 05FL__Sunday, May 15, 2005, Free

GROWING PARK STEWARDS IN THE CITY

HOR 05AM__Sunday, May 22, 2005, M RSVP/NM \$5

THE LANDSCAPE IN SPRING:

WCC 0503__Spring 2005, M \$165/NM \$210

ADVANCED BOTANICAL ILLUSTRATION-LINDA FUNK

BAC 0525__June 13-16, M \$425/NM \$475

DRAWING SUMMER FLOWERS-CAROL ANN MORLEY

BAC 0601__July 12-14, M \$225/NM \$275

FLOREGIUM-SARAH ROCHE AND CAROL GOVAN

BAC 0602__Tuesdays, August 9 & 16, M \$72/NM \$90

PROGRAM TOTAL _____

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Thank you.



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