

AMERICAN HORTICULTURIST

Why We Get Autumn Color

Have you ever wondered what makes the leaves on the trees turn bright colors in the fall? What brings on the autumnal blaze of glory? Internal chemistry, you may say, brought on by the change of seasons. But that doesn't really answer the question. How do the red maples, somber green throughout the growing season, turn a blazing crimson? How do the giant sugar maples glow yellow, orange or scarlet? And how do the aspens, which clothe our western mountains, turn into a sea of gold?

First, as everyone knows, non-evergreen trees drop their leaves each fall. Evergreens drop theirs, too, but not all at once. All season long they are green, the result of the presence of a complex and not yet fully understood material called chlorophyll within the leaves. We know chlorophyll takes hydrogen from the water brought up to it from the roots and combines it with the carbon from the carbon dioxide in the air to make starch and then soluble sugars, which feed the plant.

When fall comes and the days become shorter and the nights cooler, a layer of corky material, called an abscission or cutting-off layer, gradually forms across the point where the leaf stem is attached to the twig. As this layer grows it gradually cuts off the supply of cell sap going into the leaf. Consequently, the manufacture of chlorophyll gradually ceases and what chlorophyll is present slowly deteriorates.

The chlorophyll masks or hides the presence of other materials in the leaves. When chlorophyll disappears, however, these other substances show through. One is carotene, the same substance that gives the color to butter, carrots and the



Illustration by Elizabeth Ayella

yolks of eggs. Another is xanthophyll. These chemicals become the source of the yellows and oranges found in the leaves. Another substance is anthocyanin, which is not

merely a pigment but is believed by many to be a sugar dissolved in the sap, and which, if the sap is distinctly acid, turns the leaves a bright red; if less so and bordering more on the alkaline side, the leaves turn purplish. The third color, brown, is not a color in the same sense at all but the result of fading in yellow and orange foliage and, likely, the presence of tannins. In those cases where the leaves remain green until they drop, it is because their abscission layer permits the passage of some sap, and chlorophyll manufacture continues almost until the leaves fall off.

Why are the colors so much more intense in some seasons than others, especially the reds? This is the result of the weather. Bright, sunny days encourage the manufacture of sugars—and anthocyanins—and cool nights (under 45°F) prevent their proper dispersal throughout the plant. This is the reason why trees growing in low places or "cold pockets" are often better colored than those growing on the sides or tops of hills. Access to the sun is the reason why one side of a tree may be better colored than another. It has also been found that pin oaks heavily fed with nitrogen developed deeper reds than those that were not fed.

This explanation is a somewhat simplified version of what takes place each year, with some modifications due to weather, altitude, moisture supply and species of tree. This last factor is especially important. Some areas, such as most of Europe, fail to have the brilliant autumns we do in the Eastern United States because the right species of trees do not grow there.

—Edwin F. Steffek

River Farm Notes

You surely know the expression, "If at first you don't succeed, try, try again." Let me explain how our wildflower meadow came to illustrate the wisdom of that saying.

In the spring of 1981 we transformed six acres of the mowed lawns on our river front to meadow for several reasons: we wanted to add color to this prominent setting; we wanted to demonstrate to our members, friends and many visitors that wildlife habitats such as this one are not only ecologically very important but also aesthetically pleasing; and we wanted to conserve on fuel and manpower expense by developing a low-maintenance planting.

Good intentions, but what a disaster! After plowing, discing and seeding the field, it developed into a choking mass of pokeweed. Our seed mixture hadn't been the culprit,



Rudbeckia

Illustration by Elizabeth Ayella

and we had little pre-existing pokeweed on the property. Unhappily, we recalled that pokeweed seed can remain viable for 100 years or more. Evidently the seed had been plowed under when the field was turned to lawn and had remained buried for 50 to 100 years until we came along and plowed it up again. We had created a monster.

This spring, after remedying our problem with a program combining weeding, cutting and herbicides, we tried again—reseeding with the New England Wildflowers™ mixture available from Spruce Brook Nursery of Litchfield, Connecticut. They donated the entire 50 pounds of seed required to plant the meadow. Finally—success!

Our new meadow is ever changing, continuously introducing new color combinations. Spring Open House visitors were treated to six acres of daisies, and by the end of May the meadow overflowed with beautiful, pale-yellow evening primroses. As the season has progressed other colors have challenged the dominant yellow of the primroses. Shades of blue from bachelor's buttons, flax and chicory, and the yellows, browns and bronzes of *Rudbeckia* have appeared. Splashes of color from Moroccan toadflax and poppies have provided accents.

Our meadow should be filled with color through autumn. This season it has been a joy. Next season, who knows what it will become? Surely the combination of perennials, reseeding annuals, grasses and weeds will be a delight.

—Steve Davis

Dear AHS Member

That's how AHS begins its letters asking you to renew your membership, or alerting you to one of our membership programs like the annual free Seed Program. As a membership organization, the Society depends heavily on direct mail to recruit and keep members. Here is how our direct mail and membership programs operate.

Getting New Members

Several times each year we mail letters describing the Society's programs to people who may not be familiar with us. We send these recruitment efforts to people on horticulture-related mailing lists procured from other organizations. Though we try to eliminate duplications so that our current members do not receive any recruitment mailings, duplications are caught only when names match letter for letter. So if you're John Doe on our membership rolls, but J. Doe elsewhere, the duplication won't be eliminated. If you receive such a letter from us, please pass it along to a friend who might be interested in joining AHS.

Non-profit organizations often exchange mailing lists for fund-raising and membership purposes. To keep costs down, we participate in such exchanges. We also rent our membership lists to selected organizations. If you prefer that your name not be given out, please let us know.

Renewal Program

To keep our membership level healthy we send a series of renewal notices to members, starting several months in advance of membership expiration dates. When we receive your renewal payment we enter it into our automated system. Once the payment is credited we issue no more renewal notices, but sometimes your payment and your next renewal notice will cross in the mail. If you have just renewed and you receive another notice please disregard it. You can check the mailing label on your next *American Horticulturist* to make sure that your renewal payment has been properly credited. Your membership expiration date is at the top right on the label and reads year-month—for example,

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Member of Society of National Association Publications

8211 means your membership will expire in November 1982. A one-year renewal payment should change this date—in this case, to 8311. If you receive more than one renewal notice after you have paid, please notify us.

We mail *American Horticulturist* the last week of the month preceding the issue's date (i.e., the December issue is mailed the last week of November). To meet production schedules, we must print our mailing labels well in advance of the issue date. To ensure that you do not miss an issue of *American Horticulturist*, renew early. Usually, renewing six weeks ahead of your expiration date will keep our publications coming to you continuously.

Our renewal notices give you two options: renewing at your present membership level or contributing more to the Society by upgrading your membership. In addition to our Regular membership level (\$20/year), we have Affiliate (\$30), Supporting (\$50), Contributing (\$100), Life (\$600) and Industrial (\$1,000) memberships. We are delighted by the number of you who choose to renew at a higher level. We depend on your generosity; your dues and contributions keep the Society operating. Please remember that contributions to the Society, including dues, are tax-deductible to the full extent of the law.

If you miss an issue of *American Horticulturist*, or if you have any questions about your AHS membership, please write or call me. I would be happy to hear from you.

—Connie Clark

Cincinnati

Our 1982 Annual Meeting is fast approaching, but it is still not too late to join us in Cincinnati. Don't miss the opportunity to tour some of Cincinnati's finest gardens, hear interesting and educational lectures, cruise on the Ohio River in the Betty Blake Riverboat and attend the President's and Award's Banquet. For more information on this exciting meeting see the July, 1982 issue of *American Horticulturist* news or call Dorothy Sowerby at the Society, (703) 768-5700.

AHS to Celebrate Its 60th Anniversary

The Friends of River Farm are planning an exciting benefit celebration to commemorate the sixtieth anniversary of the American Horticultural Society. October 15 has been selected as the date for a cocktail

buffet reception at River Farm. For information about invitations please write Thomas W. Richards, Executive Vice President, American Horticultural Society, Box 0105, Mount Vernon, VA 22121.

Elizabeth Hume Joins AHS Staff

The Society is pleased to announce that a new senior staff position, Director of Horticultural Education, has been established, and Elizabeth D. Hume of Penllyn, Pennsylvania, has been selected to fill this new position. As Director of Education she will be responsible for planning and organizing all of the Society's existing horticultural education programs, including the annual meeting, spring seminar, lecture series, open houses, regional meetings and other special events, and will develop new ones.

For the past two years Mrs. Hume has been the project coordinator for the Tercentenary Gardens Collaborative, celebrating the 300th birthday of Philadelphia and Pennsylvania. It is based at the Morris Arboretum in Philadelphia. In addition to her experience as a special education teacher using horticultural therapy to help severely disabled children, Mrs. Hume has managed commercial greenhouses and has worked at the Henry Foundation for Botanical Research in Gladwyne, Pennsylvania.

Upcoming AHS Events

The following Society sponsored tours and other events have been scheduled for this fall and winter. For information about any of these events write Dorothy Sowerby in care of the Society.

September 29-October 3
American Horticultural Society
Annual Meeting
Cincinnati, Ohio

October 3-13
Post Meeting Tour of Kentucky,
North Carolina and Tennessee

October 7
Shelia McQueen flower arranging
lecture, demonstration and luncheon
Alexandria, Virginia

October 15
American Horticultural Society
60th Anniversary Celebration
River Farm

October 17 (Rain Date October 24)
Fall Festival, River Farm

October 21-November 2
Amazon Passage cruise from
Manaus, Brazil to Iquitos, Peru

November 1-17
Autumn in the Orient tour of Japan
and its gardens

December 16
Christmas Open House, River Farm

January 24-February 5, 1983
Floral Festival Cruise from
Ft. Lauderdale to Acapulco

Wanted: A Seed Bagging Machine

Our annual Seed Program is in need of a benefactor! Until now all of the seed distributed in our program has been hand bagged by volunteers and Society staff, but the size and scope of the program has grown so large that this is a nearly impossible task. We need a seed bagging machine. If any of you have such a machine available, new or used, or can lead us to a potential source, please write Steve Davis in care of the Society with information.

CALENDAR



September 9-12

Marigold Society of America National Convention
Chicago, Illinois
Information: MSA National Headquarters,
Box 112, New Britain, PA 18901

September 9-26

Los Angeles County Fair 1982 Flower Garden Festival
Pomona, California
Information: Los Angeles County Fair, PO
Box 2250, Pomona, CA 91769,
(714) 623-3111

September 11

Red Rose Rent Day
The Conard-Pyle Company
Star Roses, U.S. Route 1 & PA 796
Jennersville, Pennsylvania
The Public is invited free of charge
Information: The Conard-Pyle Co., West
Grove, PA 19390, (215) 869-2426

Tuesdays September 14-October 19,

Thursday October 28, Tuesday, November 2
Lecture Series

History of Garden and Park Design
George Washington University
Washington, DC
Cost: \$80 series, \$12.50 individual lectures
Information: Carolyn Hufbauer, Director,
GWU, CCEW, 801 22nd Street, N.W.,
T409, Washington, DC 20052,
(202) 676-8069

September 22-27

American Rose Society 101st Convention and
Rose Show
Hyatt Regency Hotel
Nashville, Tennessee
Information: Mr. Larry Kuhlman, 911
Battery Lane, Nashville, TN 37220,
(615) 297-7150

September 25-26

Pennsylvania Horticultural Society's 1982
Harvest Show
Horticulture Center/Fairmount Park
Horticulture Drive and Belmont Avenue
Philadelphia, Pennsylvania
Hours: 10:00 a.m. to 5:00 p.m.
Admission: \$2.00, children under 12 \$1.50
Information: Pennsylvania Horticultural Soci-
ety, 325 Walnut Street, Philadelphia, PA
19106, (215) 625-8250

October 1-3

Oregon Cactus and Succulent Society Fall
Show and Sale
Washington Square Mall, Portland, Oregon
Hours: Regular Mall Hours

October 2-3

20th Annual American Gourd Society Show
Fairgrounds, Mt. Gilead, Ohio
Information: American Gourd Society, PO
Box 274, Mt. Gilead, OH 43338

October 7

Flower Arranging Lecture/Demonstration by
Shelia McQueen
American Horticultural Society
Heritage United Presbyterian Church and
River Farm
Mt. Vernon, Virginia
Information: Write or call Dorothy Sowerby
at the Society

October 8-20

3rd Eastern Regional Cactus and Succulent
Conference
Mariott Hotel
Somerset, New Jersey
Information: Suzanne Crawley, Publicity Co-
ordinator, Cactus and Succulent Society of
New Jersey, 59 Hobart Avenue, Trenton,
NJ 08629

October 10-14

Second National Conference on Urban
Forestry
Cincinnati Convention Center
Cincinnati, Ohio
Theme: Urban Forestry for Liveable Cities:
Making It Happen
Information: Richard Pardo, Programs Direc-
tor, The American Forestry Association,
1319 18th Street, N.W., Washington, DC
20036

October 12-15

The Garden Club of America Flower Show
Autumn in the Atrium
Citicorp Center
153 East 53rd Street
New York, New York
Hours: Building Hours 1:00 p.m. Tuesday-
2:00 p.m. Friday
Information: The Garden Club of America,
598 Madison Avenue, New York, NY
10022, (212) 753-8287

October 14-17

National Chrysanthemum Society 39th An-
nual Meeting and Show
Detroit, Michigan
Information: Greater Detroit Chrysanthemum

Society, c/o Mrs. Edmund Jones, 138 West
Hickory Grove, Bloomfield Hills, MI
48013

October 15

American Horticultural Society 60th
Anniversary Celebration
River Farm
Mount Vernon, Virginia

October 16-17

8th Annual Potomac Bonsai Association
Symposium
Bethesda, Maryland
Information: Godfrey Trammell, 1122 Clark
Avenue, Waldorf, MD 20601,
(301) 645-3519

October 16-17, 23-24, 30-31

Chrysanthemum Festival
Callaway Gardens
Pine Mountain Georgia
Information: Education Department, Calla-
way Gardens, Pine Mountain, GA 31822,
(404) 663-2281, ext. 291

October 17, Rain Date October 24

Fall Festival
American Horticultural Society
River Farm
Mt. Vernon, VA
Information: Write or phone Dorothy Sow-
erby at the Society

October 18-20

Second Annual Zoo Horticulture Conference
Sedgwick County Zoo
Wichita, Kansas
Information: Virginia Wall, Horticulturist,
Sedgwick County Zoo, 5555 Zoo Boule-
vard, Wichita, KS 67212, (316) 942-2212

October 22-24

Eastern Orchid Congress and Tidewater
Orchid Society Show
Omni International Hotel
Waterfront Drive at St. Paul's Boulevard
Norfolk, Virginia

October 30-November 7

Southern California Floral and Garden
Exposition
Los Angeles State and County Arboretum
Arcadia, California
Information: Los Angeles State and County
Arboretum, 301 North Baldwin Avenue,
Arcadia, CA 91006

November 6

Fourth Annual California Native Plant Sale
Rancho Santa Ana Botanic Garden
Claremont, California
Hours: 8:00 a.m. to 3:00 p.m.
Information: Barbara E. Haner, Director of
Education Services, Rancho Santa Ana Bo-
tanic Garden, 1500 North College Avenue,
Claremont, CA 91711, (714) 626-1917,
626-3922

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		Mo.	Day	Yr.				Car 1	Car 2	Car 3	Yes	No		Yes	No	Yes	No	

If student away at school, give distance from home _____ miles

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Model (Skylark, Omni, etc.)			
Body type: 2 dr., Sta. Wag., etc.			
No. of cylinders			
Est. Total Mileage			
Est. Annual Mileage			
Days per week driven to work, school or depot			
One way distance			
Is car used in business* except to/from work?*			
Car location if different than mail address: City/State			

*If "yes" explain _____

*For accidents, traffic convictions, or license suspension, give dates and complete details, including cost of damages, on a separate sheet.
Check for information on Homeowners Insurance ☐ Boatowners Insurance ☐ Auto Insurance not available in New Jersey or Massachusetts.

Looking for Top Quality, Permanent Plant Labels?

The Plant Sciences Data Center of the American Horticultural Society has made over 11,500 Metalphoto plant labels since the fall of 1977. The lifetime of these aluminum labels is 10 years or more. With a customizing potential as varied as straight lettering to graphic illustrations to black and white photographs, these labels serve a wide variety of needs. The initial cost is higher than for other types of labels available, but the long life of these labels makes them a bargain. Labels are offered in very sturdy .063-inch thickness in sizes as small as 3 by 5 inches and as large as 20 by 24 inches. Thinner metal is also available: the .032-inch thickness, a more bendable metal, is good for mounted



labels, and the .020-inch thickness is popular for the 1-by-4-inch identification tag.

The metalphoto process uses light-sensitive metal and seals the image into the plate so that the image is impervious to pesticides, salt sprays, weathering, fungus and most corrosive atmospheres. The surface is smooth and glossy, the image is sharp and high contrast. Silver with black lettering or silver lettering on black are available.

PSDC can suggest sizes and styling of labels to suit many needs, including a cost estimate for orders. Prices start at \$1.75 for identification tags.

For more information write The American Horticultural Society, Plant Sciences Data Center, PO Box 0105, Mount Vernon, VA 22121, or call (703) 768-5700 ext. 6.

New, Effective Bagworm Control

Male bagworm moths were trapped in record numbers during tests last fall at the USDA research lab in Beltsville, Maryland, using a new synthetic pheromone (sex attractant). Researchers found that the moths chose traps baited with the synthetic pheromone, called 1-methylbutyl decanoate, 10 to one over traps baited with an unmated female.

Bagworms, which will feed on over 100 species of trees and shrubs and are especially devastating to cultivated arborvitae, blue spruce and juniper, are a biological curiosity. With an understanding of their life cycle, it is easy to set up an effective year-round control program.

Newly hatched caterpillars suspend themselves from branches in silken bags that are often mistaken

Seed Exchange With Japan

The National Arboretum invites adults and children of all ages to participate in a major seed exchange with the people of Japan. The exchange involves two predominant flowering trees found in American landscapes, the Japanese flowering cherry (*Prunus serrulata* and *P. X yedoensis*) and the American flowering dogwood (*Cornus florida*). Flowering dogwood was introduced into cultivation in 1731, and the Japanese cherry was first cultivated in the United States in 1876. There have been no significant introductions of Japanese cherries since 1916, and the exchange is part of a larger program to revitalize the declining quality and variety of the

cherry stock in the United States.

The Japanese people will be sending approximately one million cherry seeds to be grown here in the United States. In return the National Arboretum is collecting one million dogwood seeds to send to Japan.

To participate in the exchange collect ripened dogwood seed in September. Be sure to identify each batch of seed as to location, and whether the seed is wild or cultivated. Macerate the fruit in water, and allow the pulp and empty stones to float away. Air dry the collected seed and send it to Dogwood Exchange, U. S. National Arboretum, 3501 New York Avenue, N.E., Washington, DC 20002.



Bagworms cut foliage from infested plants and use it to construct a 1½- to 2-inch pine cone-like bag. Because the bags are so well camouflaged bagworms have no natural predators.

for small pine cones. During this stage of their life cycle (from mid-May to about the end of July), control bagworms by thoroughly spraying all the foliage of the infested plant with *Bacillus thuringiensis*. The young larva will ingest this bacterium when they feed on the foliage and will soon die.

In late summer male moths will

emerge from the bags and begin searching for females (still in the bags) via the female pheromone trail. This stage lasts from about August 1 to the end of October, and at this time the synthetic pheromone trap is effective.

Hand picking the bags is another effective, if tedious, control measure that can be used against all stages of the insect—from overwintering sacks of eggs to newly hatched caterpillars. Be sure to destroy the bags since caterpillars are able to crawl back into a tree from the ground.

Most nurseries and garden centers will carry pheromone traps and *Bacillus thuringiensis* (sold as BT, Dipel, Thuricide) this season. Both products are also available from W. Atlee Burpee Company, Warminster, PA 18991.

Top Daffodil Cultivars

The American Daffodil Society, in their December, 1981 issue of *The Daffodil Journal*, has published a list of the 30 daffodil cultivars that in 1981 were the most consistent show winners across the country. To compile the list, show chairmen from each accredited A.D.S. show submitted a list of all the ribbon-winning flowers in their show. Each cultivar was awarded four points for each first place ribbon, three for a second, two for third and one for honorable mention. The top 30 cultivars all received more than 100 points, and 11 received more than 120. 'Stratosphere' lead the list with 217 points, and 'Festivity' placed a close second with 216 points. The other top point-winning cultivars were 'Pipit' with 194, 'Daydream' and 'Geranium' with 179, 'Foundling' with 157, 'Beryl' with 145, 'Silver Chimes' with 144, and 'Cheerfulness', 'Golden Dawn' and 'Panache' with, respectively, 132, 131 and 120.

Four miniature daffodil cultivars received over 140 points. 'Hawera' placed first with 204 points, and 'Segovia' was second with 149 points. 'Xit' and 'Sundial' both received 143 points.

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1983 Williamsburg Garden Symposium



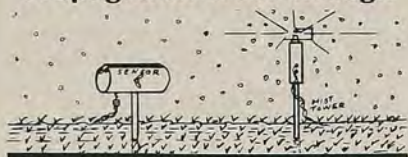
A new Williamsburg attraction this season is Bassett Hall, the 18th-century house that served as the local residence of Mr. and Mrs. John D. Rockefeller, Jr. and their family. Its grounds and interior reflect many of the interests of two of America's great tastemakers and how they lived during the time they were instrumental in the restoration of Colonial Williamsburg.

Don't miss Williamsburg's fabled colonial gardens at a high point of bloom and color during the 1983 Williamsburg Garden Symposium April 17-20. Plans are nearing completion for one of the most exciting and informative programs ever offered by this joint Colonial Williamsburg-American Horticultural

Society event. The final program, offering something for everyone—including a special afternoon at the Norfolk Botanical Gardens during the Azalea Week Festival—will be available later this month. Also look for an agenda and registration form in the January issue of *American Horticulturist* news.

Colonial Williamsburg

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Plants Still Protected in New Versions of Endangered Species Act

The House of Representatives and the United States Senate have passed bills amending and reauthorizing the Endangered Species Act of 1973. The two bills, H.R. 6133, passed June 8 and S. 2309, passed June 9, are scheduled to be sent to a Congressional Joint Committee to

resolve the differences between the two versions.

Both bills continue protection for plants and other lower life forms and contain amendments to speed up the listing process for an endangered species. They also reauthorize the Act for three years.

New Slide Series Available

"Transplanting, Guying and Staking Landscape Plants" is the title of a new slide series developed by T. Davis Sydnor, associate Professor of Horticulture at The Ohio State University.

One of the most critical stages in the life of a tree is the period surrounding its initial planting or transplanting into the landscape. The new slide series illustrates the procedures recommended for handling different types of nursery stock

(balled and burlapped, bare root and container grown plants) before, during and after transplanting.

For more information on this 103-slide series, which comes with a script, and another series prepared by Sydnor entitled "Selected Trees Adaptable to Urban Situations," write or call the Agricultural Education Curriculum Materials Service, Room 254-D, 2100 Fyffe Road, Columbus, OH 43210, (614) 422-4848.

News for Greenhouse Owners

The University of Delaware Institute of Energy Conversion has produced an improved thermal energy storage system that lengthens the usable life of Glauber's salt (sodium sulfate decahydrate), a phase-change material that releases or absorbs large quantities of energy as it freezes or melts.

The problem with Glauber's salt in the past has been that when used in its pure form, it quickly loses storage capacity as subsequent freezing causes the material to break down. Scientists at the Institute have been able to improve its cyclical integrity with a clay additive and other modifications. Storage units with the improved material should have at least a 15-year cycling life. This material can use solar heat, hot air, hot water and waste heat as its heat source.

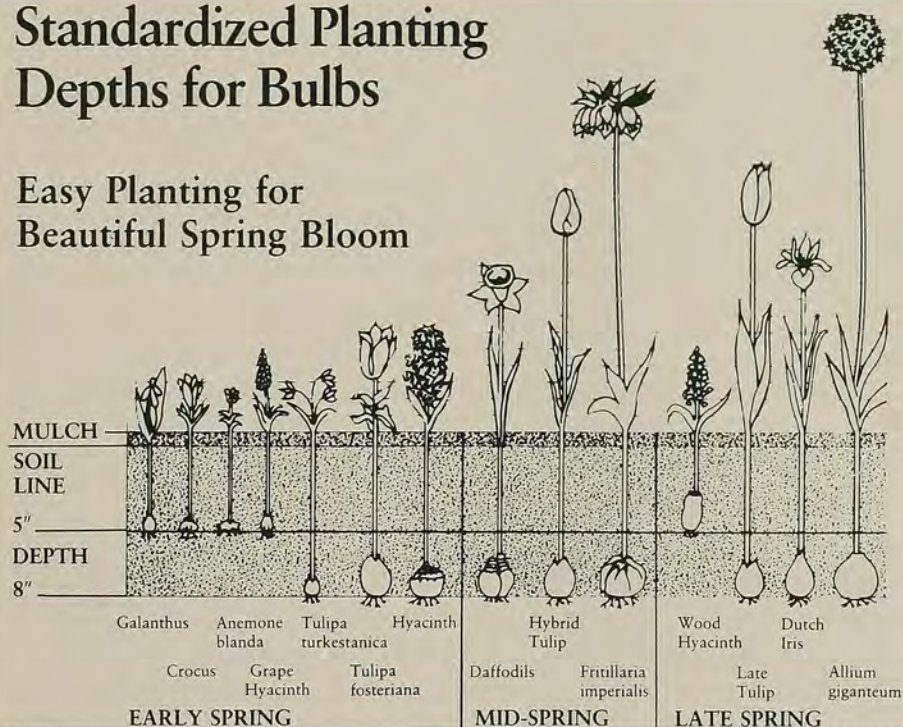
The University has granted Inso-lar, Inc. an exclusive United States license to produce the improved thermal energy storage system. For more information write or call Inso-lar, Inc., 212 East Main Street, Port Jervis, NY 12771, (914) 856-3600.

Additional Source for Exbury Azaleas

Readers looking for some of the Exbury azaleas mentioned in Martha Prince's article, "Exbury and Its Azaleas," which appeared in the June issue of *American Horticulturist*, may want to write for a catalogue from one source not listed in June's "Sources" section. Carlson's Gardens, Box 305, South Salem, New York 10590, specializes in fragrant yellow azaleas and has an excellent list of Exbury cultivars. Their catalogue is \$2.00.

Standardized Planting Depths for Bulbs

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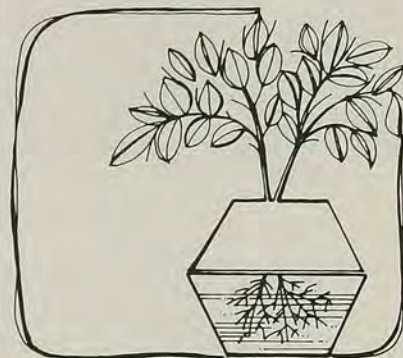


September heralds the beginning of bulb planting season throughout much of the country, and with this season come innumerable questions concerning the proper depth and spacing of bulbs. The planting depths indicated in the illustration above are appropriate for the entire country. These new, standardized

depths are the result of research conducted throughout North America by the Department of Horticultural Science, North Carolina State University, Raleigh. Large bulbs should be spaced four to six inches apart, and smaller ones, such as *Anemone blanda*, should be spaced from one to two inches apart.

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Theft Prevention for Large Plantings

Theft, unfortunately, can be a problem in almost any newly planted garden, especially those in public displays. After thieves stole several of the newly planted junipers from the entrance planter at Pendleton Memorial Methodist Hospital in New Orleans, Helen Koelemay, an AHS member who had worked closely with the maintenance department of the hospital for several years, designed a "horizontal fence" in an attempt to protect the remaining plants in the display.

The horizontal fence she designed consisted of lengths of medium to large mesh chicken wire fastened down by lengths of galvanized pipe that had been woven through the ends of the wire and placed at the bottom of trenches dug around the outside of the bed.

To install a similar fence, first dig the trenches around the sides of the planter or bed to be protected and then cut lengths of chicken wire to cover the bed. Two lengths generally are sufficient for most beds, but make sure they overlap by three or four inches in the center and reach the bottom of the trenches around the sides of the bed. Cut a square out of each corner before folding down the sides of the chicken wire so the galvanized pipe can be woven through the edge and placed at the bottom of the trench. Once the pipe and the edge of the chicken wire have been buried, the chicken wire can be stretched in place over the top of the plants. Fasten the "seam"

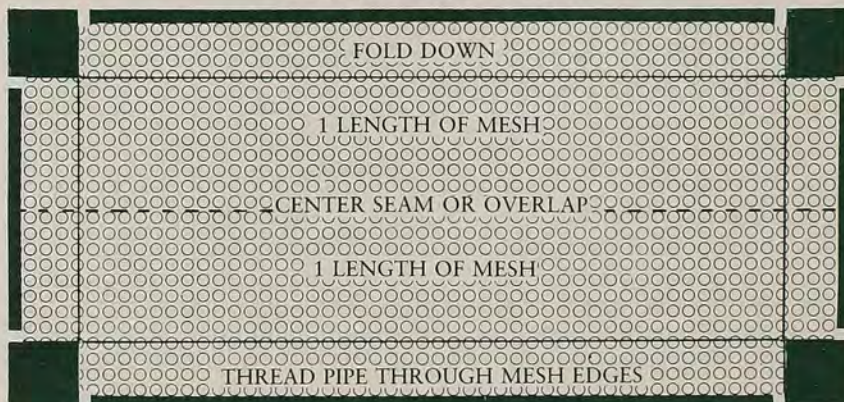


Helen Koelemay designed a "horizontal fence" to protect the plants in this planter box at the entrance of Pendleton Memorial Methodist Hospital in New Orleans.

between the two pieces of chicken wire together with wire.

Pendleton Hospital's entrance planter is planted with a cultivar of prostrate juniper, and the plants have simply grown through the mesh and will soon obscure it. Another solution, especially for planters with a wider variety of plant material, would be to cut as small a hole as possible through the mesh, fit the top of the plant through the hole and then fasten the hole shut with pieces of wire. With either method the chicken wire eventually will be obscured by the plants, and it will rust away. By the time it disappears, however, the plants will be well enough established that they would be difficult for a thief to dislodge.

Horizontal Fence



The depth of the fold down and the size of the cut-out square are determined by the depth of the planter box.

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Excavation at Monticello Reveals Jefferson's Horticultural Accomplishments



The West Front of Monticello.

Thomas Jefferson's horticultural pursuits will be more evident than ever to visitors because of the restoration of his vegetable garden and the recreation of his orchard at Monticello, his mountaintop estate in Charlottesville, Virginia. These projects, conducted under the direction of the Thomas Jefferson Memorial Foundation, were completed this season.

The garden restorations are a result of the most extensive archaeological excavations ever to take place at Monticello. Since they began in June, 1979, in addition to the evidence unearthed in the gardens, workers have found Colonial and

early United States coins and porcelain as well as the tools and products of early Monticello crafts.

The original, 1,000-foot-long vegetable garden, completed by Jefferson in 1809, was located on a plateau carved into the southern slope of the mountain. Although both it and the eight-acre orchard below were necessary for food production, they also served an experimental function by enabling Jefferson to selectively eliminate inferior plant varieties. In the kitchen garden alone, 250 varieties of vegetables were grown between 1769 and 1826. These included 19 varieties of peas, one of Jefferson's favorites. He is

also known to have cultivated such oddities as purple and white broccoli, serpentine cucumbers and many-headed cabbages.

Jefferson's methodical record keeping is making possible a nearly exact restoration of the garden and orchard areas. The restoration of the vegetable garden, which will be 650 feet long, will be based on his garden memoranda of 1812, in which he specifies the laying off "anew, and differently, the middle platform of the garden." In this memo he also gives the dimensions of the walks, alleys and beds. Gateways to the garden found recently by the archaeological staff support Jefferson's align-

ment of the beds and walks.

Archaeological work throughout the garden area will make it possible for Jefferson's original paling fence to be reconstructed. An essential feature of an early 19th-century garden, Jefferson instructed that the pales "should be so near as not to let even a young hare in." Soil stains from the rotted fence posts have indicated the course of the fence line, and variances in the intervals between posts have pinpointed the original gate locations.

Below the stone wall that retained the plateau where the vegetable garden stood, the orchard and vineyard areas envisioned by Jefferson will be recreated. According to William M. Kelso, Monticello's resident archaeologist, "soil stains from rotted tree roots coincide with Jefferson's orchard plans regarding individual tree locations. This will make it possible for trees including apples, pears, quince and nectarines to be planted in the original grid configuration."

In the orchard, Jefferson experimented with 122 varieties of 10 different types of fruit, including apples, peaches, pears, nectarines, quince, plums, cherries and apricots. The diversity of plantings found at Monticello was quite unlike the practices on many Virginia plantations of the period, where orchards often consisted of one or two kinds of fruit. Jefferson was a firm believer in agricultural experimentation, and once stated that, "The greatest service which can be rendered any country is, to add an useful plant to its culture."

Many of the varieties grown at Monticello originated in Europe. Following the Revolution, however, advancements in horticulture resulted in the introduction of many American varieties, particularly apples and peaches. As Jefferson wrote to James Madison in 1785 from Fountainebleau, "They have no apples here to compare with our Redtown pippin. They have nothing which deserves the name of peach."

It is very fitting that such archaeological discoveries should be taking place at Monticello, for Jefferson himself was the world's first scientific archaeologist. In his excavation of a pre-historic Indian burial mound near Monticello and his ac-



Thomas Jefferson Memorial Foundation staff archaeologists, assisted by students from James Madison University, began exploring the Monticello Kitchen yard near the Mulberry Row "industrial" area during the summer of 1981.



A closeup of the kitchen yard excavation, pictured above, where archaeologists have unearthed valuable information on Monticello's kitchen garden, thousands of artifacts and the foundation of a previously unknown outbuilding.

count of the investigation in *Notes on Virginia*, dated 1785, Jefferson anticipated the methods of modern archaeology by more than a century. Even his entrance hall at Monticello served as a museum room, where mammal bones, Indian artifacts and findings from Lewis and Clark's expedition to the Northwest were displayed.

Visitors are welcome to tour the excavation sites during their stay at Monticello. An artifacts exhibit has also been constructed below the main house, the contents of which will change as new discoveries are made.

Archaeological work will continue

to provide insights into Thomas Jefferson the man and Monticello over the course of the next two years. The project is being funded by the Thomas Jefferson Memorial Foundation and the National Endowment for the Humanities.

Monticello and the "Archaeology of Thomas Jefferson" exhibit are open from 8 A.M. to 5 P.M. every day of the week. Admission is \$3.00 for adults and \$1.00 for children aged 6-11. For visitor information or group reservations, please write to Monticello, Box 316, Charlottesville, Va., 22902, or call 804/295-8181.

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LETTERS

Upon reading your editorial, "Sink or Swim in the Gene Pool?" (*American Horticulturist*, June, 1982), I was disappointed to find no mention of the Seed Savers Exchange. The Exchange is an association of amateur growers across the United States and several foreign nations who locate and maintain vegetable cultivars that are not commercially available. [Editor's Note: The official purpose of the Exchange as listed in the Society's new directory, *North American Horticulture, A Reference Guide*, is "To preserve heirloom and endangered vegetable cultivars."] Anyone growing a food cultivar not available from current commercial sources, or anyone who can contribute some time and garden space to growing these cultivars should write Seed Savers Exchange, c/o Kent Whealy, Rural Route 2, Princeton, MO 64673. The Exchange is a tax-exempt, non-profit organization.

The Seed Savers Exchange is *not* a seed company. It provides a number of services aimed at maintaining and dispersing the gene pool of food crops, including publishing a list of hundreds of amateur growers, what cultivars they have to share with other members and what cultivars they are looking for. The exchange

aims to have as many amateur gardeners growing as many food cultivars as possible to insure the continuation of the available gene pool.

—Norman E. Shumate
Chesapeake, Virginia

Books to Write Away For

Members interested in specific, statistical information on the rare plant trade in the United States will want to obtain a copy of the latest report from TRAFFIC (USA), published in conjunction with the Rare Animal Relief Effort, the World Wildlife Fund-US and the Natural Resources Defense Council. The 100-page report, entitled *International Trade in Plants, Focus on U.S. Exports and Imports*, focuses on four major groups in the trade: orchids, cacti and other succulents, cycads and insectivorous plants. In addition to presenting import/export statistics, the report addresses the problems of collecting information on the traffic in protected plants and discusses legislation and enforcement.

To obtain a copy of this report send a check for \$9.50, made out to the World Wildlife Fund-US, to TRAFFIC (U.S.A.), 1601 Connecticut Avenue, NW, Washington, DC 20009.

The Nebraska Statewide Arboretum has published a list of the scientific and common names of plants found in Nebraska. In addition to listing the botanical names for both native and introduced species, this publication attempts to standardize the common names used for these plants, and it also indicates whether a plant is native or introduced.

To order this 85-page publication send \$3.00 to Nebraska Statewide Arboretum, 112 Forestry Sciences Lab, UNL-East Campus, Lincoln, NE 68583 and request publication number 101.

Seed Program Reminder

Remember it's not too late to donate seed to our 1983 Seed Program. Write or call Steve Davis in care of the Society for more information.

Erratum

In the December, 1981 issue of *American Horticulturist* an error appeared in the article on hoyas by Steven Heintze. The photographs on pages 25, 26 and 27, incorrectly credited to the author, were taken by David Silverman.