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Nightmare on Elm Trees

Can we ever hope for a rebirth of this beloved native tree?

As trees go, its flowers are insignificant, its fall color of little note, its bark pretty blah. It's susceptible to an endless list of diseases; insects can't get enough of it.

But what an easily grown and shapely landscape tree it was! Planted in rows along so many American streets, its unique spreading vase shape turned them into veritable cathedrals. But the rows are largely gone now, victim to the Dutch elm disease that was first recognized in the 1930s. Can those of us who grew up under elms hope to go home again?

While some scientists continue to look for a cure for Dutch elm disease, breeders are seeking a cultivar of *Ulmus americana* that's impervious to the disease, or an Asian counterpart that will serve as a substitute. There has been some progress, and some frustrations, on both fronts.

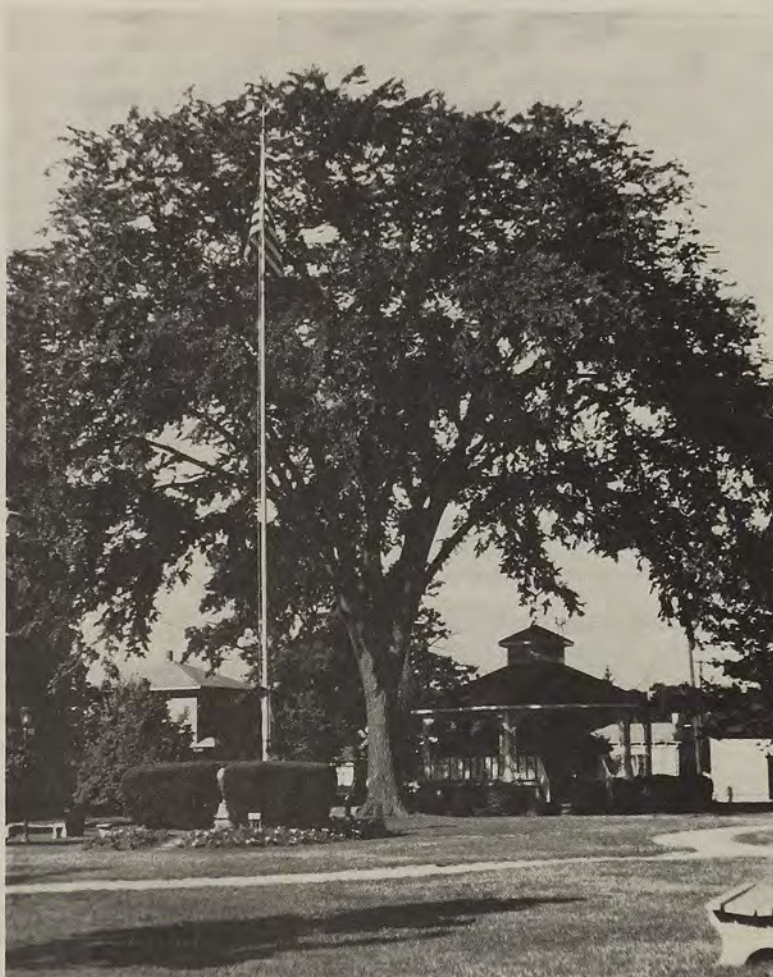
Fighting the Fungus

John Hansel says he's like a lot of other people who grew up under elms and was incredulous at seeing them begin to die by the hundreds. In 1967, Hansel, the owner of a New Hampshire manufacturing firm, established the Elm Research Institute to raise money for research that might save the elm, and at first, a good deal of that money went toward finding a treatment that would stop or prevent the fungus, *Ceratocystis ulmi*, that causes Dutch elm disease.

Because the fungus is spread by beetles, DDT served as an effective treatment until its use was halted for ecological reasons in the 1960s. Nothing as cheap or powerful has been found since, despite efforts in many directions.

Says Hansel: "We got into a lot of biological experiments, including using predators such as wasps and using a pheromone for trapping beetles. But traps are totally impractical for insects so tiny that they're like a cloud of dust."

ERI-funded research led to the development of a procedure in which a fungicide, benzimidazole carbamate salt (sold as Lignasan BLP), was



Mike Bucur/Courtesy of the Elm Research Institute

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injected into the tree just below ground level. A 1986 study reported that injecting elms with the fungicide saved about 25 percent of all of those with Dutch elm symptoms, and that thirty-three percent of those with only minimal symptoms survived. Similar results were obtained with injections of Arbotect, a derivative of benomyl.

Encouraged by the results, the Elm Research Institute organized what it called a "Conscientious Injector" program of volunteers whose goal was injecting 100,000 elms across the country. Institute literature says the treatment can save 98 percent of trees on which it was used. But Hensel says this is true only when the trees are completely disease-free, and notes that early signs may be impossible to detect. "It's like a cancer."

Treatment may also be hampered by a number of environmental factors. The elm's own vascular system, which Hansel compares to a corkscrew, tends to slow uptake of the fungicide.

Discouraged by nature's apparent efforts to thwart humans' best intentions, the institute is now putting proportionately more of its resources into breeding than in finding a cure.

Meanwhile, in the late 1970s, a Montana research group began pursuing the idea of finding a natural bacterium that would fight off the Dutch elm disease fungus. They, as well as R.J. Scheffer of Holland, discovered that a bacterium called *Pseudomonas syringae* would kill the fungus.

While Scheffer carried out field tests in Holland on some 7,000 European elms, Americans Gary Strobel, Steve Lam, and Brenda Lam became curious about how the bacterium killed the fungus. They created a mutant strain of the fungus that could be tracked as it moved through an elm, and began a field test to see if it would work on mature elms as well as seedlings. But they made a procedural error. The Environmental Protection Agency requires review of all genetically altered micro-organisms released into the environment. Strobel and his colleagues thought it wasn't necessary in this case, since the same strain had been released years earlier. But a local newspaper drew attention to the work, the experiment received negative publicity nationwide, and Strobel cut down and burned his 14 inoculated elms. It was a serious setback, he says, but his group is continuing to study the substances that the bacteria uses to fight the fungus; work similar to Scheffer's is being carried out by Chris Murdock of the University of Maine in Orono. Strobel reported in a recent issue of *American Nurseryman*.

No Immune American

Researchers who have tried to breed a disease-resistant American elm have known the deck was stacked against them from the start. The odds are against just happening upon a naturally resistant selection, and the American elm can't be crossed with more resistant Asian elms because they have differing numbers of chromosomes. Occasionally a selection will look promising, but susceptibility to Dutch elm disease is usually not apparent until the tree is mature; also in doubt until maturity is whether the tree will have the sought-after vase shape. Michael Dirr, in his *Manual of Woody Landscape Plants*, observes that there are actually three distinct shapes among the American elm, including a narrow form and an "oak form" in which the branches are widely spreading and less arching. Barring

Where Did It Come From?

The Dutch got a bad rap when they were stuck with the name for the devastating elm tree disease, since in fact, they have done some of the most useful research directed at finding a cure. Gary Strobel, professor of plant pathology with Montana State University, writing with Richard Gray in a recent *American Nurseryman*, notes a theory that the disease originated in Asia, and was brought to Europe on the Trans-Siberian Railroad during World War I. The fact that most Asian elms are immune to the disease, while European and American natives are susceptible, "dovetails nicely with this theory," they write. It was a Dutch botanist, Marie Beatrice Schwarz, who discovered the cause of the tree loss; about half of Holland's elms were destroyed.

The disease is spread from tree to tree by elm bark beetles, who mate on the trees before the females bore into the tree to lay their eggs. The larvae and new adults further enlarge the tunnels. The fungus produces toxins and deposits that clog the trees' vascular system, cutting off the flow of water and nutrients. The disease apparently was brought to the United States in elm logs imported for use as veneer because of their interesting burls.

the extremely slim possibility of a naturally occurring mutation, the most likely source of a Dutch-elm-immune American lies within the still young field of genetic engineering.

For now, the most promising American elms available to the public are the American Liberty elms, developed by University of Wisconsin scientists with the backing of the Elm Research Institute. Researchers Eugene Smalley and Raymond Guries describe these elms as "genotypically diverse multiclones having similar phenotypes," which means they look almost identical but aren't quite the same genetically. They were produced through controlled pollination of Dutch-elm-resistant American elm parents. The most distinctive has been patented with the cultivar name 'Independence'. Smalley and Guries say that the American Liberty elms aren't as resistant as Asian elms, but "their resistance represents the highest level thus far achieved by selection and breeding within the American elm."

Individuals who join the Elm Research Institute get one of the trees and can buy up to three, but the institute's major thrust is getting cities to be sponsors of its "Johnny Elmseed" program. In conjunction with the Boy Scouts of America, a municipality can obtain up to 300 trees. The scouts care for the trees—which come with a 10-year guarantee—until they reach planting size.

At least one other new *Ulmus americana* cultivar may be just around the corner. Next year, the National Arboretum plans to release its first American selection, still unnamed. Denny Townsend of the arboretum's tree-breeding program said the tree shows some symptoms of Dutch elm, but recovers well. "It shows the best resistance of any tree we've looked at," he says, "and we've tested thousands."

Some Promising Asians

Some breeders ask, in essence, "Why bother?" They believe that as an urban tree, the American elm outlived its usefulness. Its tall, spreading form just doesn't fit in with small homesites and telephone wires. They observe that the Chinese elm is naturally resistant to the *Ceratocystis ulmi* fungus, offers more interesting bark—its tendency to exfoliate has earned it the common name of "lacebark" elm—and an assortment of attractive shapes, and can be held to a size well under most power lines. The tree has suffered unfairly from being confused with the unattractive Siberian elm, and from the fact that its appearance varies considerably if it is propagated from seed. Tissue



Above: Gillet Avenue in Waukegan, Illinois, in summer 1962. Below: The same street seven years later, after trees were wiped out by Dutch elm disease.

Photos Courtesy of the Elm Research Institute

culture will make this tree a star of tomorrow, they predict.

Most breeders are somewhere in the middle. Townsend, who is experimenting with both American and Asian elms, says: "There's still a place for the American elm on a wide lawn or along broad streets in the suburbs."

And breeders are eager to announce that a new Asian cultivar offers the American's shape. In 1973, Smalley chose to release 'Sapporo Autumn Gold', a cross between a Japanese elm (*U. japonica*) and a Siberian elm (*U. pumila*), over similarly resistant candidates because it appeared to have horizontally spreading branches. "We were misled by this youthful characteristic," Smalley says; with age, the tree tends to develop a strong central trunk.

All growers cautioned anyone considering an elm for their landscape to steer clear of the Siberian elm. Although it is frequently crossed with Asian elms to provide greater disease resistance, the Siberian elm is

susceptible to the elm leaf beetle, and has "a miserable habit and no redeeming ornamental characteristics," says Michael Dirr.

Dirr, professor of horticulture at the University of Georgia at Athens, is an unabashed champion of the Chinese elm, and predicts that it will become "the next great tree" for the American landscape. In his manual, now in its fourth edition, he notes that the American elm is subject to many devastating pests and diseases besides Dutch elm. "I have often wondered why they are treated like royalty when they are so fallible," he writes.

"It's hard for people to let go of the past," he added in an interview. "The federal government spent millions of dollars to find a new elm and never got a tree they were comfortable with." Writing last year in *American Nurseryman*, Dirr described 10 promising Chinese elm cultivars, including two of his own: 'Emerald Isle' is globe-shaped, while 'Emerald Vase', as its name implies, is closer to the



Photos by Ben King

The 'King's Choice' Chinese elm, from left, unpruned at 11 years; after pruning this winter; and leafing out this spring.

American elm in form. But it will be about three years before they begin to become available, he says.

Dirr's cultivars will be beat to market by 'King's Choice', selected by Hampstead, Maryland, nursery owner Ben King. 'King's Choice' is "the only patented form we are aware of," Dirr writes in his article. Dirr has found the tree to be outstandingly hardy, surviving temperatures of minus 22° F. It has dark green, glossy leaves, and is an exceptionally fast grower.

Another Nemesis

Some American elms thought to have been killed by Dutch elm disease may instead have succumbed to elm yellows, some scientists suspect.

A tree with elm yellows shows no sign of the disease until the tree is past saving. But microbiologists with the Agricultural Research Service have now produced a genetic "probe" that may serve as a diagnostic tool.

Elm yellows is caused by a type of mycoplasma-like organism, or MLO, which cause more than 200 plant diseases. The probe, made from a DNA fragment of the elm yellows MLO, could detect whether elm seedlings are infected with the disease before they are planted, and might show whether that MLO plays a role in other plant diseases, according to Ing-Ming Lee of the Microbiology and Plant Pathology Lab in Beltsville, Maryland.

Researchers have been unsure how many MLOs are causing these diseases, because the same MLO can cause different symptoms in different plants.

King tells of the day he was out roguing selections with his late wife when they came upon a tree that was easily twice as tall as any other that had been planted at the same time. They immediately ran to get stakes to protect it. King describes its branches as drooping to a canopy silhouette much like that of the American elm, but he emphasizes that even the real McCoy needed to be pruned to attain its famous shape. King, who is 80, remembers helping his father plant elms in his hometown of Three Rivers, Michigan. "Many now living have never seen a young elm pruned," he says. "For the first few years, the lower limbs must be cut back to the bole to create eventual headroom." His cultivar is being reproduced by tissue culture; he expects to release 40,000 clones by spring 1991.

In 1985, the National Arboretum introduced 'Dynasty', a cross between two Chinese elms that is nevertheless "distinctly vase shaped," writes Dirr. It grew to 30 feet in 16 years, and is unusual for having a red fall color, at least in cool climates. Like 'King's Choice', it has the exfoliating bark that makes the Chinese elms outstanding.

Among other elms currently available in the trade is 'Regal', released by the Wisconsin breeding program in 1983. A columnar, resistant, and vigorous tree selected from seed obtained from Holland, it's not a contender in the American look-alike sweepstakes, but its uniform, upright habit makes it a good candidate for planting near buildings.

This year, the Wisconsin program released 'New Horizon', described as their most disease-resistant yet, and growers are anxious to evaluate its performance. A relatively slow grower, with large, dark green leaves typical of the Japanese elm and the upright shape of the Siberian, it has strong wood, fairly short side branches and

wide crotches that make it tough in a windstorm, Smalley says.

Townsend said that this summer, the National Arboretum expects to offer two new introductions: a Chinese-European hybrid that like 'Dynasty' develops red color in fall, reaching its 30 to 35 foot height faster than Chinese elms, but with a more upright shape than American elms; and a Chinese selection with exfoliating bark and a vase-shaped crown that grows slowly to about 45 feet.

A tree that has received a good deal of publicity is 'Across Central Park', a Chinese elm that has been growing in New York's Central Park for more than 100 years, thereby proving its durability in the face of urban conditions, although some breeders dismiss it as unattractive. It is being propagated at Michigan Technological University as part of a project started by the Arthur Ross Foundation.

Ben King cautions that many of the promised new elms may prove to be only that. In 1984, an article in the *American Horticulturist* News Edition listed 20 elm cultivars as being resistant and said they "may soon be available to the public." Yet only two of them are relatively obtainable today.

Perhaps the trees were not worthy; perhaps only the most patient can succeed in getting new trees to market. It will be up to America's gardeners to demand and proclaim the next "king" among elms.

For more information on the Elm Research Institute, write Harrisville, NH 03450, or call (800) FOR-ELMS. 'Sapporo Autumn Gold' and 'Regal' are available from McKay Nursery, 254 Jefferson, Waterloo, WI 53594.

For more information on 'King's Choice', write 4600 Millers Station Road, Hampstead, MD 21074, or call (301) 239-8525.

Members' Forum

Proud of Their Product

Although your March expose on the shortcomings of porous landscape fabrics undoubtedly upset the manufacturers, we agree that most fall far short of the lofty weed-prevention claims made for them. However, our fabric, WEED-X, has been specifically developed to solve the very problems your article discussed and has undergone extensive scrutiny in university tests. WEED-X offers a five-year money-back guarantee against weed penetration. We have attached a recent report from Dr. Bonnie Lee Appleton, cited as an authority on fabrics in your article.

David N. Caldwell
Dalen Products, Inc.

Appleton's study compared weed growth in one-gallon containers covered with eight different landscape fabrics plus mulch, brown polyethylene film plus mulch, mulch alone, and no covering. This study found the fewest shoots and roots in WEED-X, although "no treatment controlled bermudagrass since root growth occurred in the mulch layer above the fabric." Fewer bermuda roots penetrated the WEED-X and the brown polyethylene.

Appleton emphasized that this study, which has been accepted for publication in the Journal of Environmental Horticulture, was limited to containers.

Overwintering Seeds

Because I live in a cold climate, to get a good start on planting I usually start my seeds indoors under lights, but too often the seeds are weak and many die. Two winters ago, I began planting a large variety of seeds—annual, biennial, and perennial—in little containers, enclosing them in sandwich bags, and leaving them all winter in a relatively sheltered spot outdoors. The idea was to see which ones would survive the winter and germinate, and when they were big enough, to plant them directly into the ground, instead of first into "six packs" to harden off as they were moved outside.

As a result of this year's wild weather fluctuations, many varieties germinated and left me with a problem: I knew it would soon turn cold again. What was I to do with the seedlings that had germinated too soon? I thought of putting them in the

greenhouse, but decided I would let them suffer as part of the experiment. I removed the plastic covers and set the seedlings in their little containers into a flat, which was covered with a clear plastic dome to give them light and also to protect them from the pelting rain. Amazingly, although the weather did turn colder and below freezing,

they survived and, along with others that germinated later, are thriving.

William Rowley
Rexdale, Ontario, Canada

We think our members make excellent "researchers" of horticultural products and procedures! Thanks for sharing with your cold-climate compatriots.



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Highlight Your Garden at Night

During the day gardens are flooded with natural light. The play of light and shadow makes the beauty of the garden change from season to season, hour to hour, moment to moment. The ever-changing scene in the garden is an essential part of the fascination we have with gardens. But at night most of our gardens are swallowed in darkness. Moonlight creates its magic, but this is lost when the moon is not full or is hidden by clouds.

Night is when we can touch the garden with the magic of light. A plant that blends in with all of the others may be emphasized with light. Unusual shapes lost in the background can be illuminated to add architectural drama in the garden. Undesirable views can be forgotten. Light is a tool that can enhance any garden.

But there are many other reasons to illuminate your landscape. Light enhances security. Safety may be a factor. Well-lighted stairs, walks, and pools ensure that a visitor does not stumble blindly into injury. Lights also guide visitors where you want them to go: to the driveway or front door, to a patio, or on the walk rather than the lawn. Lighting can extend your time in the landscape and permit recreational uses at night. Outdoor lighting can even help to enhance your indoor space by filling the dark windows with views that give the room a feeling of greater spaciousness.

Sources of light can be gas lights, kerosene torches, candles, wood, and electricity. But this article will focus on the use of electric lamps (what most of us refer to as light bulbs) in the landscape. It will address only the design aspects of garden lighting; for technical information on installation, you can refer to do-it-yourself books on the topic or obtain the services of a licensed electrician.

Plan

Landscape lighting, to be effective, is more than flooding the yard with light or lining a walk with six path lights from the standard 12-volt system kit. The project must be designed to do what you need and want. The design or planning process requires thought, work, and experimentation. Let's begin with what most of us have, a dark blank page or one that is lighted by the fixture beside the door or on the porch.



Path lighting is probably the most common type of garden lighting. In addition to adding beauty to the night landscape, it helps guide visitors and prevents accidents.

The place to start is to draw your property on paper as if you were looking down onto it from an airplane. Draw this plot plan to scale including your house, garage, and other permanent structures and features like driveway, sidewalk, walls, pools, ponds, utility lines, and easements. This is your base drawing. After completing it, you will not draw anything more on this sheet of paper. Now you will tape tracing paper over it and draw on the tracing paper.

Spend time in the landscape at night as it is presently lighted. Determine why you want to illuminate the landscape. Is it to beautify the landscape? Are you concerned about security? Will lighting make the arrival of guests safer? Do you want to be able to play volleyball at night? By determining the function of the lighting project, you will have a better idea what areas need to be illuminated and the relative amount of light needed to do the job. Generally, smaller areas that are being lighted for mood can be handled adequately with 12-volt systems. Large areas that need intense light or highly dramatic effects will most likely require the installation of a 120-volt system.

On the first tracing paper overlay draw in areas to be illuminated. Most areas should be drawn as circles. Label each area according to the function of the lighting: to light tennis court, to light statue, to light path or drive, etc. After you have indicated these areas you should decide on your primary focal point: what area of light is most important considering how you want it to function? You can then decide secondary focal points. You now know where you will place your brightest or most dramatic lighting and the next brightest areas. To avoid having splotches of light isolated in a background of darkness, you should connect the primary and secondary areas with dimly lighted areas that will add continuity and depth to the landscape.

Experiment

With the information you have put together, you can now look at the different lighting techniques commonly used and try them out in your landscape.

Up-lighting for Directional Viewing

When the lighted object can be viewed from only one direction, accent lights are a good choice.



Up-lighting for Multi-angle Viewing

If the lighted object may be viewed from any direction, multiple lights placed evenly beneath the object provide attractive results.

Moonlighting

The effect of moonlight filtering through trees is not only pleasant, but provides security lighting for an area.

Down-lighting

For outdoor activity areas, light sources well above eye-level with overlapping areas of illumination provide uniform light for recreation, safety, and security.

Silhouette Lighting

Plants with interesting form and structure are highly dramatic when silhouetted against a wall.

Spotlighting

Statues, fountains, and specimen plants can be a focal point in the garden. Unequal lighting from two directions gives the effect of added depth and dimension.

Spread Lighting

Spread lights produce circular patterns of light that illuminate low-growing plants. This type of lighting can fill in areas between the focal points.

Path Lighting

Path lights provide good illumination for paths and steps while avoiding glare.

Duplicate these effects with lights in clamp-on shield fixtures connected with weatherproof extension cords. Be very careful when experimenting. Don't overload circuits. Work only when everything is dry and wrap all plug connections with electrical friction tape. Set up all lamps and cords and then plug into the power. Be creative, try all possibilities, and don't be tied by rules.

Decide what has worked best and then purchase fixtures that will best achieve the desired effects. Consult a

Above left: Backlighting or spotlighting can highlight trees or manmade garden features and create shadows that add dimension.

Above right: Moonlighting not only creates a pleasant, romantic sense of moonlight filtering through trees, but provides additional security to an area.

Right: Up-lighting can be done from one direction, as it is here, or several, depending on the number of angles from which it will typically be viewed.

Photos Courtesy of Nightscaping



qualified lighting system specialist for the best selection of fixtures and equipment. It is important that the fixtures are compatible with both your budget and the style of your garden.

Final Lighting Plan

Your final plan will indicate the location of power sources, fixtures, and connecting lines. Consult with an electrician or the appropriate books to determine the acceptable loads and equipment to do the installation "to code." The final plan should be checked by an electrician.

The extent of your lighting will determine whether you should go with a standard- or low-voltage system. With quality systems, the smaller landscape can be very effectively illuminated with a low-voltage system. However, a more complex lighting plan will likely require a mixture of standard- and low-voltage

lighting or standard voltage alone. Do-it-yourselfers may be able to install low-voltage systems, but unless you are very experienced with electricity, you should hire a licensed electrician to install a standard-voltage system. Before you do any work with either system, check local building codes for the need for permits.

Tips from the Experts

Hide the source of light and never aim the lights so they shine into anyone's eyes or the neighbors' property. Place fixtures out of the way, but remember that you will have to change bulbs and maintain fixtures, so keep them accessible. Keep your system flexible so that it can change as the landscape evolves.

When floodlighting an area, place the lights high enough (15 to 20 feet is usually best) to avoid long, distorted

Gardener's Q&A

shadows. Use two flood-lights on opposite sides of the area for best results.

The source of strong lights should be well away from activity areas because of the insects the lights will attract. Yellow lights correct this to a certain extent, but colored light is difficult to use in the landscape as it causes unnatural and undesirable effects on plant foliage.

Provide perspective with your lighting. A single source of light on an object usually makes the object appear either one-dimensional or overly contrasted. Two light sources of unequal strength will provide nicely contrasted shadow areas that provide depth. When lighting a rough or patterned surface, place a single direction light source close to the wall so that the texture of the surface casts shadows.

Lighting a flower bed can be very tricky. A mixed bed should not usually be evenly illuminated. Focus on a single plant or group of plants; illuminated monoculture beds—for instance, a bed of red salvia—can make a major statement and can become the primary focal point in the garden. Flowers that illuminate best are those that hold their blooms high above the foliage, like delphiniums, lupines, and tulips. Cannas, with their attractive form, also make good subjects for lighting.

Trees that have a light, airy foliage provide better effects when lighted than those with dense foliage. Dense conifers stand out when the tips of their foliage is illuminated. Use shrubs to camouflage fixtures in the landscape.

Most of all, experiment and discover what works best in your landscape. A little romance and magic can make your garden special. If you have been to New York City's Central Park and have seen the trees around the Tavern on the Green filled with the small white lights, or if you have been to Disney World, you know what I mean.

—Jack Kerrigan

This article was reprinted with permission from the October 1989 issue of The Garden Center Bulletin, published by the Garden Center of Greater Cleveland. Jack Kerrigan, former editor of the Bulletin, is now a horticulturist with the Cuyahoga (Ohio) County Cooperative Extension Service.

Q: I live in an apartment and have to do all my gardening on a small patio, which has about all the container plants it can handle. But I would like to try to attract hummingbirds. Is there anything I can put in a hanging basket that might work?

D. T., Annandale, Virginia

A: Hummingbirds are attracted to flowers that are tubular and bright red, orange, or yellow. Fuchsias would be a good choice for a hanging basket if you can give them protection from direct sun. You might try hanging a feeder next to some brightly colored blooms, such as geraniums, impatiens, nasturtiums, nicotiana hybrids, petunias, red salvias, or snapdragons.

Q: I have been growing rhubarb for several years and recently was alarmed to hear that it becomes toxic after it flowers. Is this true?

M. B., Hyattsville, Maryland

A: By the time the plant has flowered, harvesting should have ceased, to allow the crown to rejuvenate for the next year's crop. Harvesting of the petiole or stalk of the rhubarb—one of the few perennial vegetables—should be done in spring. While the rest of the plant contains deadly oxalic acid, the petiole is safe to eat.

Q: I have received two conflicting pieces of advice from herb books. In order to develop the most flavor, should herbs be planted in poor rocky soil or nutrient-rich soil?

L. B., Washington, D.C.

A: Advice that says herbs should be planted in poor rocky soil is persistent but inaccurate, according to Mary Ober, corresponding secretary at the Herb Society of America. Like most plants, herbs need a good, friable, nutrient-sufficient soil. The only bit of truth in advice to the contrary is that too much nitrogen in the soil can cause an overabundance of leafy growth, which in turn decreases the flavor of the herbs, so try to avoid fertilizers that are high in nitrogen.

Q: My French hydrangea has beautiful foliage, but no flowers. What is wrong?

A. G., Philadelphia, Pennsylvania

A: French hydrangeas are often killed to the ground in winter, so that gardeners have to be content to enjoy them for their foliage. Their buds are very susceptible to late frosts. That is especially likely this year because of the unusual mild winter-cold spring temperature pattern. Next year, once your bush starts leafing out, you may want to cover it when low temperatures are predicted. Another possibility is that, if you prune in the spring, you are pruning away the buds. *Hydrangea macrophylla* flowers from buds on the previous season's growth; be careful to prune away only winter-damaged growth and spent flower heads.

—Cathy Gau
Horticultural Intern

The Only Good Quackgrass...

There's new hope for a biological weapon in the battle against slugs.

Roger D. Hagin, a weed scientist with the U.S. Department of Agriculture's Plant Protection Unit in Ithaca, New York, has isolated and synthesized an antislug compound released by quackgrass when it is killed.

The find is something of a double blessing because quackgrass is a persistent weed that competes with crops for fertilizer and water. The substance isn't found in living quackgrass. Commercial production of the substance as a slug bait seems likely; studies have shown that it doesn't harm freshwater snails or mammals.

In the meantime, some gardeners report success in shielding plants from slugs by surrounding them with gum balls—those nasty seed pods dropped by the hundreds by sweet gum trees.

Both examples seem to illustrate that in horticulture, it's a rare plant that grows no good.

Splotch 'n' Soda

Common household baking soda may help prevent the fungal diseases that leave ugly discoloration on roses. Cornell University researchers led by Kenneth Horst, a professor of plant pathology, tested baking soda sprays on roses over three growing seasons. 'Pascale' and 'Mr. Lincoln'—chosen for their susceptibility to fungal infections—were sprayed every three or four days from mid-April through October with various solutions of sodium bicarbonate. A solution of one tablespoon per gallon of water was found most effective in preventing damage from blackspot. Insecticidal soap was added to help the solution spread across the leaves.

The study, funded by a manufacturer of sodium bicarbonate-based products, was undertaken in an effort to find an environmentally safe and inexpensive treatment for fungal diseases, said Horst. "It is not uncommon for fungal diseases to develop a tolerance to chemical fungicides," he observed.

The team is not recommending unrestricted use of baking soda by home gardeners because the studies are not complete. High concentrations of the bicarbonate solution will burn rose leaves, and different varieties of roses vary in their sensitivity.

Horst said the soda may work by changing the acidity of the leaf surface to provide a buffering effect, or it may change the topography of the leaf and "confuse" the invading fungal spores.

The Root of the Problem

J-hooked. Kinked. Girdling. These are not skateboard maneuvers or wrestling holds, but common root defects of container-grown trees. If you bought a container-grown tree last spring, it may be on its way to sickness or death if you did not re-route its roots.

Jennifer Schuster, Virginia Department of Horticulture extension specialist writing in the *Virginia Gardener*, explains that roots of container-grown trees must scrunch together in limited space and often bend sharply to one side (j-hooked roots), twist at abnormal angles (kinked roots), or coil around other roots or the trunk (circling or girdling roots). If such trees are carelessly planted in the ground, they will be poorly anchored and have difficulty absorbing water and nutrients.

How can these problems be avoided?

♦ Choose balled or burlapped trees. They normally have a compact and fibrous root system that is easily transplanted into the ground.



Charles Harrington/Cornell University

Greenhouse worker Bill Makepeace sprays a solution of sodium bicarbonate and detergent in water on roses at Cornell University. The solution is believed harmless to humans, but protective gear must be worn at the university during pesticide applications.

Shake It! Shorten It!

Although most of us would like to see our plants grow as high as possible, professional growers need to keep them from becoming too tall and gangly before they reach the marketplace. To do this, they use a number of methods, all of which have some drawbacks.

They can use chemicals, but the principle one, Alar, can no longer be

used on vegetable crops. They can stress plants by withholding water or nutrients—primarily phosphorus—but it's difficult to judge when the plant is becoming so stressed that its life is in danger. Cooler temperatures will work for some plants, but not others. Another method is DIF: control of the difference between day and night temperature. Plants stay shorter if day and night temperatures are about the same, or if day temperatures are cooler than night temperatures. But this is a complicated approach.

Will Carlson, a professor of horticulture at Michigan State University, writing in *Greenhouse Grower*, describes another approach that he admits sounds a bit far out, but could become the method of height control. Being shaken, it appears, is also effective at curbing plant growth.

In one study, Easter lilies that were gently shaken by merely having fingers brushed over them once a day grew two inches shorter than lilies that didn't get such a treatment. A New Zealand grower is putting this observation into practice by attaching plastic fingers to a boom watering system so that the leaves of his entire crop are disturbed each time he waters. "While we have no scientific data on how this system works," writes Carlson, "the grower was pleased with the results."

Perhaps it's just a case of bad vibrations? In any case, gardeners who want their plants to grow tall might keep the effect in mind and put the brakes on shakes.

♦ Before purchasing container-grown trees inspect them carefully. Check the soil surface for kinked roots. Make sure the tree is centered in the container; off-center planting often causes j-hooked roots. Then pull the plant from the container and examine the root ball. The roots should be small-to medium-sized and supple. White root tips indicate healthy roots; black tips indicate a dying system and rot.

♦ When you plant the trees, straighten the roots. Circling roots along the edge and bottom of the root ball should be pulled away from the ball, pruned slightly to encourage new growth, and spread out when planted. Tightly girdled roots need to be split. Thrust a shovel through the bottom half of the root mass to create two flaps, then use a knife to make several vertical cuts through the circling roots on the top. When planting, spread the bottom flaps into a horizontal position.

Making a Difference



An HAE resident shows how she feels about her patio garden.

A Beauty of a Project in Elgin, Illinois

Once, weeds grew between the drive and fence that leads to the apartment complex. The grounds were littered with broken glass and the walls were covered with graffiti.

Today, visitors to this low-rise housing project in Elgin, Illinois, find that same ground colorful with vegetables and flowers. They are likely to be greeted by dozens of excited residents, eager to show off their gardens, where marigolds, petunias, zinnias, tomatoes, peppers, corn, zucchini, cucumbers, greens, and much more are planted in neat rows and even intricate geometric patterns. Bright flower baskets are hanging over patios surrounded by colorful flowers; vines cover chain-link fences. Almost every square foot of ground has flowers or vegetables planted on it. There's not a weed to be seen.

It's hard to believe that this is the same public housing project that was such an eyesore only two years ago. How did the transformation come about?

In September 1985, Elgin resident Patricia Hill attended the American Horticultural Society Annual Meeting, which was held in Chicago that year. One of the speakers was Charles

Lewis, now research fellow in horticulture at Morton Arboretum, who described his long experience in urban horticulture and showed slides of extraordinary gardens planted by tenants of public housing in Chicago, New York City, and Philadelphia.



Zinnias and other bright-colored annuals make a young gardener smile.

"I was tremendously impressed, thinking that would be a wonderful idea to carry back to the Housing Authority of Elgin [HAE]," recalls Hill. "I didn't quite know how to approach it, but a few years later, the mayor of Elgin asked me to be an HAE commissioner. I accepted eagerly, knowing now I'd have my chance to implement the garden program."

Her appointment was part of a larger effort to revamp and reform the housing authority. All but one of the commissioners were replaced; a new executive director, Sandra Freeman, was hired, and a new staff put in place. Hill proposed an urban gardening program for Elgin's public housing to the other commissioners and Freeman, and invited Lewis to Elgin to present his slides and program to the staff and tenants. The idea was greeted with enthusiasm, and one of the tenants, Sue Malone, volunteered to coordinate the program, which became known as Project Beautification.

Says Hill: "Sue's enthusiasm and hard work were contagious and everyone pitched in to make it happen." Merchants and HAE vendors donated plants, seeds, and garden equipment, as well as money and merchandise that would be awarded as prizes at the end of the gardening season. Rototilling was made available to any tenants who wanted to start a garden, and by mid-May, 28 tenants had plants in the ground.

In August, community leaders selected the best garden at each family court and senior citizen high-rise, and the best overall family court. Prizes were awarded at a family picnic sponsored by the housing authority.

Hill calls Project Beautification an unqualified success. "It gave tenants a sense of pride in themselves and where they live, and fostered a sense of community and neighborliness," she says. "Vandalism and graffiti were reduced in the courts where gardens were planted. This year, we had even greater participation. Some of the families are even talking about renting a city garden plot and planting pumpkins so all the children can have a pumpkin for Halloween."

"Project Beautification benefitted not only everyone who participated, but the entire community."

Our thanks to Patricia Hill for contributing this report and the wonderful photographs of the Project Beautification gardens and gardeners. We would love to hear from other members about programs and individuals who have used horticulture to "make a difference" in their own communities.

Photos by Patricia Hill

Introducing Lilacs to the Next Generation

Since it was established in New Hampshire six years ago, the Governor's Lilac Commission has distributed between 40,000 and 50,000 lilacs. Some have been planted along the state's highways, both to beautify them and introduce visitors to the state flower. About half have been sold at a nominal price in a popular annual promotion for a bank chain. But probably the most important use of the lilacs, according to Dr. Owen Rogers, professor of horticulture at the University of New Hampshire, has been to introduce young children to plants and gardening and older students to a potential career.

Representatives of the commission visit elementary schools, at the schools' request, to talk about lilacs and their care, and help children plant some lilacs on the school grounds. This spring alone, they visited a dozen elementaries, leaving behind a bit of instant beauty and, Rogers hopes, the beginning of a lifetime of plant appreciation.

At the high school level, the commission's involvement is even more intensive. Students attending horticultural classes at vocational high schools are presented with small, tissue-cultured lilacs and taught how to care for them over the winter, until they are big enough to be planted in the spring. At that point, the lilacs may become a civics project, if the students choose to plant them around the school or on other public property, or a lesson in economics, if the students decide to sell them.

The students get a valuable lesson in horticulture, their town gets some beautiful plants, and the commission gains something as well, Rogers said. "They're helping us to produce more lilacs. Before tissue culture, it used to be enormously difficult to propagate some cultivars. Tissue culture allows us to have many different kinds much more quickly. And of course, we've introduced lilacs, and the idea of a career in horticulture, to another year of young people."

The commission receives most of its financial support from the state. These state funds have allowed the commission to plant lilacs along the highways where they create a colorful welcome for visitors in spring. The commission receives additional funds from private businesses and industries whose leaders want to help the environment or beautify their state.

Rogers said about half of the lilacs distributed by the commission have been sold in an annual promotion by the Fleet chain of banks, which has branches throughout the state. This year the bank paid the commission \$6 for each of 5,000 shrubs and sold them for \$5 each.

Through selling the idea of helping something to grow—plants in a garden and money in an account—the bank gets new depositors, and New Hampshire residents get a beautiful bargain. Says Rogers: "The lilacs are usually gone by 10 o'clock the first day."



Cub Scouts in Dunbarton, New Hampshire, planted lilacs at a fire station, church, and other public buildings on Earth Day.

Live Oaks for Texas

A Texas communications company paved the way for some 750 live oaks to be planted by more than 2,000 school children in 22 communities throughout the state last spring.

"Project Live Oak" was a promotional effort by ATC/Claydesta. Claydesta Communications, founded in Midland, Texas, had been acquired by the ATC company in Atlanta, Georgia, and officials were afraid of losing their image as a Texas organization. Their publicists suggested the tree-planting project following the much publicized poisoning of the historic Treaty Oak in Austin last year.

Mike Grimley, ATC/Claydesta senior vice president, said the project was

intended to ensure that Texas had at least 600 potential Treaty Oaks in the future. "Because the Treaty Oak's poisoning seemed so senseless, we wanted to make environmental awareness a key part of Project Live Oak. We hope the trees planted all across Texas will make people stop and think about the environment and become wiser, more sensitive caretakers of the world around us."

The Texas Association of Nurserymen served as advisors to the project and helped prepare educational material on the value of trees, the history of the Treaty Oak and the live oak species, and the care and planting of trees.

Regional Notes



The Missouri Botanical Garden's Climatron brings the tropics to St. Louis.

Climatron Reopens After Two Years

The Missouri Botanical Garden's Climatron reopened March 30 after being closed for over two years for renovation. The Climatron is a unique geodesic dome greenhouse that recreates a tropical rain forest. Signs throughout the Climatron teach visitors about fragile ecosystems and diminishing rainforests.

The St. Louis garden also opened two new facilities on March 30. The Schoenberg Temperate House houses temperate plants from southern Europe, North Africa, southern California, and

Australia; the Brookings Interpretive Center on the Tropics links the Climatron and the Temperate House and includes a large diorama explaining the consequences of deforestation.

The Missouri Botanical Garden and the Climatron Complex are located at 4344 Shaw Boulevard. Hours are 9 a.m. to 5 p.m. daily; between Memorial Day and Labor Day hours are 9 a.m. to 8 p.m. For more information write or call Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166, (314) 577-5100.

Wings for Norfolk

The Norfolk Botanical Garden has received \$10,000 dollars to endow a butterfly-hummingbird garden in memory of an anonymous donor's parents. The donor has a long-held fascination with these winged creatures and hopes the garden will become a peaceful spot within the 175-acre Virginia garden.

Features will include many butterfly favorites, including flat rocks for "sunning" and shallow puddles for drinking. Nectar-producing flowers will lure butterflies and hummingbirds to the gardens while host plants will provide food for hungry caterpillars

and entice female butterflies into the garden to lay eggs.

Norfolk Botanical Garden Foundation President Bill Stiffler said the gift is "just the first step in many new and wonderful things that will enhance the botanical garden." The garden will be incorporated into Norfolk's master plan to be developed later this year.

The Norfolk Botanical Gardens are located on Airport Road off Azalea Garden Road. Hours are 8:30 a.m. to sunset daily. For more information write or call the gardens at Airport Road, Norfolk, VA 23518, (804) 441-5385.

Rare Orchid Propagated

The Marie Selby Botanical Gardens in Sarasota, Florida, has had success with another rare Ecuadorian orchid (see *American Horticulturist* November 1989). *Epidendrum ilense* was propagated at Selby Gardens by tissue culture; resulting samples were sent to other botanical institutions. French orchid breeder Maurice Lecoufle received one of the tissue samples and obtained seed by self-crossing the mother plant.

As a result the pumpkin-scented orchid is now available to collectors although it has disappeared from its natural habitat—near the top of the rain forest canopy where the white fringed flowers grew on the trunks and branches of trees. Selby Gardens botanist Calaway H. Dodson discovered four specimens in 1976; when he returned to Ecuador six months later the original patch of forest was a corn field. Dodson wrote in the *American Orchid Society Bulletin*, "I found no more plants that time, or the succeeding trip, or ever again... *Epidendrum ilense* apparently became extinct in the wild without even the courtesy of being listed as an endangered species."

Efforts to reintroduce the orchid to the wild have produced indeterminate results. "The way to save the plant in the wild is to save the forest," John Atwood, current director of orchid identification at Selby Gardens told the *New York Times Magazine*. "Unless you save the habitat, there's no point."

The Marie Selby Botanical Gardens has sponsored nearly 100 plant collecting expeditions to tropical rain forests in the past 15 years. The gardens are internationally known for their outstanding orchid collections; of the 6,000 plants in the collection, 4,500 are species plants. Bromeliads, aroids, ferns, and gesneriads are also well represented.

The gardens are located on Sarasota's downtown waterfront on South Palm Avenue off U.S. 41. Hours are 10 a.m. to 5 p.m. daily except Christmas. For more information write or call the Marie Selby Botanical Gardens, 811 South Palm Avenue, Sarasota, FL 33777, (813) 366-5730.

Courtesy of the Missouri Botanical Garden



The gardens of Toronto's Casa Loma opened this spring after a four-year renovation.

Casa Loma Opens in Toronto

The newly renovated gardens of Casa Loma, a Toronto castle with a six-acre garden originally designed by horticulturist Sir Henry Pellatt, opened to the public this spring. The renovation of the gardens, including research, design, fundraising, and construction, have been overseen by volunteer members of the Garden Club of Toronto.

Special features of the garden, which was created by Pellatt 70 years ago, include a secret garden with a dragon tree sculpture, a computerized dancing

fountain, a major ornamental grass planting, a rhododendron and azalea dell, a hillside garden, and a garden of water-loving plants.

Casa Loma is operated and maintained by the Kiwanis Club of West Toronto. Additional planting will continue for two years. The gardens are open from 10 a.m. to 4 p.m. seven days a week. For more information, write the Garden Club of Toronto, 777 Lawrence Avenue East, Don Mills, Ontario M3C 1P2.

AARS Gardens

Gardens in Ohio and Washington State have been added to the 140 accredited by All-America Rose Selections, Inc. Fellows Riverside Gardens in Youngstown, Ohio, and Point Defiance Rose Garden in Tacoma, Washington, were selected for accreditation based on the professional quality of the garden, geographic location, size, number of visitors, public service, and commitment to rose growing, according to Omer Schneider, AARS president. AARS is a nonprofit organization of U.S. rose growers who test new rose varieties and determine which can be recommended as exceptional.

Desert Tree Book

The Tucson Chapter of the Arizona Native Plant Society is offering a book on *Desert Trees* as part of its series promoting indigenous and arid-adapted trees for desert cities. The 32-page booklet, which contains information on choosing and caring for 54 trees suitable for desert conditions, replaces a poster that has been offered by the society. The group has previously published a book on *Desert Shrubs*. A new publication, *Desert Vines and Groundcovers*, will be available this fall, and will be followed by *Desert Accents and Wildflowers*.

To obtain the booklet, send \$2 to the Arizona Native Plant Society, P.O. Box 41206, Tucson, AZ 85717.



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Wildflower Grows Better With a Friend

The brilliant scarlet Indian paintbrush roams throughout the West with other wildflowers and grasses, and thanks to research at the National Wildflower Research Center, this striking native may become a beloved garden plant as well.

Current knowledge of the best propagation methods and seed harvesting techniques is minimal so that Indian paintbrush seed sources are limited and their prices high (about \$500 per pound of seed). The center's research on an annual variety, *Castilleja indivisa*, shows that the plant is a parasite. Since it draws water and possibly nutrients from plants around it, seed sown with that of another plant produces larger and healthier plants, which in turn yield more seed.

Research was conducted by Elinor Crank, a research horticulturist with the wildflower center, who first planted 100 Indian paintbrush seedlings with 100 Texas bluebonnet (*Lupinus texensis*) seedlings in four-inch pots. The same size



Indian paintbrush growing alone, front, and with Texas bluebonnet.

pots were also used to grow 100 Indian paintbrush seedlings planted alone.

After three months Crank compared the height and weight of the plants in each group. The Indian paintbrushes grown with the Texas bluebonnets grew to an average of eight inches tall while the lone plants only reached three inches. Likewise, the first group weighed in at eight grams per stem while those grown without the Texas bluebonnets averaged less than a gram.

Similar studies have been conducted with several perennial species of Indian paintbrush with corresponding results, but the wildflower center is one of the first to study this annual species. If the preliminary findings are accurate, Indian paintbrush seed will become more readily available and affordable and easier to grow.

This is part of a two-year study that also will look at the plant's seed germination requirements and include field work on seed production per plant per acre. The research is funded by the Agricultural Diversification Program of the Texas Department of Agriculture.

Write or call the National Wildflower Research Center at 2600 FM 973 N., Austin, Texas 78725, (512) 929-3600.

Courtesy of the National Wildflower Research Center

Flora of North America Goes to Press

One of the most ambitious botanical undertakings in the history of North America has crossed a major hurdle. Flora of North America (FNA), a project to publish a synoptic flora of all species of vascular plants native to North America north of Mexico, has sent its first volume (*Ferns and Gymnosperms*) to Oxford University Press. It will be published in 1991.

When the FNA team has completed the entire project in 2002, it will have compiled 12 volumes and a computerized database of detailed information on the vascular plants of the continental United States, Canada, Greenland, and Saint Pierre and Miquelon Islands. *Flora of North America* will include identification keys, summaries of habitat and geographic ranges, pertinent synonymies (a list of the scientific names that have been applied to a species and its subdivisions), descriptions, chromosome numbers, phenological information, other biological observations, and a comprehensive bibliography; 17,000 to 20,000 species will be covered.

Nancy R. Morin of the Missouri Botanical Garden is the convening editor. The Missouri Botanical Garden (the organizational center), the Hunt Institute for Botanical Documentation (the bibliographical center), and twenty other institutions have representatives on the editorial committee. More than 200 authors will contribute articles.

"The amount of effort that will be required collectively is enormous," says

Morin, "but the potential usefulness of the project, particularly in view of the use of computers, is almost unlimited." Since the computer database will be continually updated, FNA should be an ever-expanding source of information for research being done on North American plants.

The editors are designing the flora to appeal to a wide range of interests beside botany. For horticulturists, they

plan to include information on horticultural potential, sources of seeds, known diseases, and growth characteristics.

The current flora project began in 1982 and has received funding from the Pew Charitable Trust and the National Science Foundation.

For more information write to: Flora of North America, Missouri Botanical Garden, P.O. Box 299, Saint Louis, MO 63166.

Wildflower Chosen Perennial of the Year

A native American wildflower, creeping phlox (*Phlox stolonifera*), has been chosen perennial plant of the year by the Perennial Plant Association. The landscape plant is native from Georgia to Pennsylvania and hardy in all but the most extreme climates of the United States.

Creeping phlox is tolerant of shade and acidic soil and works well as a ground cover, as an underplanting with azaleas and rhododendrons, or under spring bulbs. The plants dislike limey soil or heavy clay, but are relatively trouble-free, even resisting the powdery mildew that plagues many phlox species.

The plant forms a rosette of shiny oval leaves then quickly sets out

runners that root as they grow. Six-to-eight-inch flower stalks are covered with flat panicles of starlike flowers. *P. stolonifera* is available in a variety of pastel colors and a number of cultivars including: 'Bruce's White' (also called 'Alba' or 'Ariane'), 'Blue Ridge' (pale lavender), 'Sherwood Purple' (pale purple), 'Homes Fires' (rose pink), 'Pink Ridge' (may be listed as 'Home Fires' or 'Melrose'), 'Osborne White' (white tinged with pale lavender), 'Iridescence' (lavender blue), and 'Daybreak' (light lilac).

For more information on the Perennial Plant Association write 3383 Schirtzinger Road, Columbus, Ohio 43206, or call (614) 771-8431.

Williamsburg Symposium Blends Best of Old and New

WILLIAMSBURG, VA—The day of the cardboard tomato is over, according to a garden columnist for the *Los Angeles Times*.

"In the next century, we're going to be eating better than we ever have before," said Rosalind Creasy, a featured speaker at the 44th Williamsburg Garden Symposium. Americans' palates are maturing, she said; we are no longer satisfied with "a chunk of iceberg lettuce and a tomato that can withstand velocities of 14 miles per hour." Quality and variety are the bywords, and using the rich plant heritage at our disposal, chef, gardener, and consumer alike can now enjoy such exotic treats as red, white, and blue potato salad and rose petal sorbet.

At the early April symposium, co-sponsored by Colonial Williamsburg and the American Horticultural Society, gardeners, garden writers, designers, and horticulturists heard many such fresh, modern approaches to vintage plants and traditional landscape design.

Creasy observed that Americans, increasingly sophisticated in their tastes, are exploring unusual foods, including those once common in their ancestors' diets. "Heritage" vegetables, with their unusual shapes, colors, and tastes, are becoming more widely known due to the efforts of seed conservation groups. Creasy collaborated with one of these groups, the Iowa nonprofit grower Seed Savers Exchange, to grow vintage vegetables in a variety of climates. To prepare for her latest book, *Cooking From the Garden*, Creasy planted organically grown "theme gardens" filled with endangered species imported by European and Asian immigrants generations ago. Her themes ranged from ethnic groupings (Mexican, Italian) to gardens containing many varieties of the same vegetable. For one garden, Creasy planted 12 species of eggplants up her driveway: they were oblong and melon-shaped, yellow, white, and purple, with tastes ranging from mild to creamy, but none looked, or tasted, like a typical supermarket eggplant.

Another theme garden contained Native American Indian foods. It included the three "sisters of life"—squash, corn, and beans—which Creasy predicted will be grown in increasingly greater varieties; and amaranth, a grain that was grown as

long as 5,000 years ago. After festering in obscurity (Cortez outlawed the Aztecs from using it for their rituals of human sacrifice 500 years ago), this highly nutritious foodstuff is now enjoying a comeback.

Creasy's research led to her discovery of the pleasures of edible flowers. Some fine restaurants, such as San Francisco's Chez Panisse, have begun to grow gardens filled with exotic vegetables and edible flowers right next door to their establishments.



Boxwood, which can be seen throughout Colonial Williamsburg, was among the many topics on the program of this spring's symposium there.

One can dine on such blooms as lilies, anise hyssops, and candied belinda roses in salads, soups, and butters. But, before adding flowers to your menu, Creasy warned, be sure to have a reliable guide to discerning poisonous from non-toxic varieties. Keep away from delphiniums and watch out for petunias, she said, which can induce a feeling of flight.

Also exploring new uses for old species was William Flemer, president of Princeton Nurseries in Princeton, New Jersey. Flemer, agreeing with President Bush's recent statement that tree planting is the most cost-efficient way to clean polluted air, said there are many old and neglected tree species that thrive amid urban pollution and street glare. The low-spreading Yoshino cherry (*Prunus yedoensis*), for example, is small enough to avoid overhead wires, while it offers

shade and pretty blossoms; the 'Redspire' pear (*Pyrus calleryana* 'Redspire') resists auto fumes; and the 'Cardinal' crab apple (*Malus hupehensis* 'Cardinal'), a brand-new cultivar that Flemer developed, resists apple scab disease.

Elsa Bakalar, returning for her second year at the conference, showed harmonious ways to blend old-fashioned and contemporary flowers. Connecticut perennial expert Fred McGourty detailed his "modern old-fashioned" garden design for Carter's Grove plantation. The garden is old-fashioned in having the blowy, warm, Gertrude Jekyll-influenced style of the 1930s, but it uses hardy, contemporary cultivars to replace vintage plants and requires minimal maintenance, McGourty explained.

Donna Matthews, staff horticulturist for the American Horticultural Society, together with Wesley Greene and Rollin Woolery of Colonial Williamsburg, described and exhibited examples of the many boxwood cultivars available to the gardener and discussed their uses in the home landscape.

Some experts focused on new ways to modernize landscapes and gardens. Virginia horticulturist Bonnie Appleton detailed her designs for revitalizing old gardens; landscape designer James van Sweden described his "user-friendly garden" for public spaces. Lecturers at a house plant clinic displayed species of tropical plants that have only recently been made available to the American public.

Other events included a demonstration of flower arranging in the "Birmingham" style, bird walks and wildflower walks, and landscape and greenhouse tours with Colonial Williamsburg designers and horticulturists. John Austin, senior curator and curator of glass and ceramics at Colonial Williamsburg's collections department, shared his expertise in 18th century flowerpots. Dr. H. Marc Cathey, director of the U.S. National Arboretum, explained the U.S. Agriculture Department's revised hardiness zone map, the changes it reflects in the American climate, and the implications of those changes for the garden.

—Beth Slatkin

Beth Slatkin is a free-lance writer living in Williamsburg, Virginia.

Photo Courtesy of Colonial Williamsburg

AHS Bulletin Board

Recycling at AHS

The staff at River Farm recently inaugurated a recycling program for paper, glass, and aluminum. All white office paper is collected in special containers and taken to the office of Gerry Hyland, a Fairfax County supervisor for the Mount Vernon District. It is then picked up by the county as a part of its comprehensive recycling initiative. Glass bottles and aluminum cans are carried to local recycling centers by AHS staffers.

"Everyone is participating with enthusiasm," says recycling coordinator Tom Barrett. "It's such an easy way to reduce the amount of trash we send to the landfill and to help clean up the environment." Building supervisor Jane Glass estimates that trash production has been halved as a result of the new program.

Since only white paper is recyclable locally, anyone corresponding with AHS is urged not to send off-white or colored paper. If you are interested in starting a recycling program in your office or neighborhood, check with your local public works department for the address of the closest collection center, or call the Environmental Defense Fund's toll-free recycling hotline ([800] 225-5333) for information on recycling centers nationwide.

Environmental Outreach

Three AHS staffers recently participated in an all-day gardening workshop in the District of Columbia. "All You Need to Know About Gardening" was sponsored by Urban Earth, a local environmental organization, and the D.C. Department of Recreation and Parks Youth and Urban Gardens Program. Donna Matthews, AHS horticulturist, gave a presentation on companion planting; Joe Keyser, director of programs, spoke on urban tree planting; and Tom Barrett, editor of the second edition of *North American Horticulture*, discussed "Gardening, Greening, and the Environmental Movement." Other speakers included Holly Shimizu of the U.S. Botanic Garden and John Short, soil scientist with the Center for Urban Ecology.

AHS and Cleveland Garden Center Co-Sponsor Flower Arranging Symposium

Cleveland will be blooming this October during a Flower Arranger's Symposium co-sponsored by the American Horticultural Society and the Garden Center of Greater Cleveland. The symposium, which will be held October 9 at the garden center, will feature speakers, slide presentations, and a fresh flower arranging demonstration.

Topics and presenters for the one-day event are:

♦ "Unusual Perennials and Annuals Excellent for Cutting," presented by Allen Armitage, professor of horticulture at the University of Georgia. Armitage is a sought-after speaker who has lectured to the trade on topics ranging from growing flowers for the fresh-cut market to procedures for keeping them in prime condition.

♦ "Grasses—The Under Utilized Element," a lecture by John Greenlee. Owner and manager of a Pomona, California, nursery specializing in unusual grasses, Greenlee will describe varieties adaptable to the perennial garden as well as easily found wayside varieties suitable for floral designs.

♦ "Variegated and Colored Foliages," a talk by Janet Oberliesen, director of development of Chadwick Arboretum of the Ohio State University in Columbus, Ohio. Oberliesen is an accredited flower show judge and has served on the decorations committee of the Columbus Museum of Art.

♦ "Inspiration and Techniques for the Flower Arranger," a demonstration by Pauline Runkle, owner and manager of a floral design and landscaping business in Manchester-by-the-Sea, Massachusetts. Runkle was production assistant for the WGBH television series "A Small City Garden," and is a regular participant in the Boston Museum of Fine Arts' "Art-in-Bloom" festival. Her work has appeared in *Better Homes and Gardens* and *Town and Country* magazines.

The charge for the symposium, which includes a box lunch, is \$78 for AHS members and members of the Garden Center of Greater Cleveland; \$88 for non-members. Lectures begin at 9:30 a.m. followed by lunch and the design demonstration, which finishes at 3:00 p.m.

To register, fill in the form below and mail it, along with a check payable to the Garden Center of Greater Cleveland, to the Garden Center at 11030 East Boulevard, Cleveland, OH 44106, Attn: Flower Arranging Symposium. Registrations must be received by October 1 as seating is limited. For more information or directions to the Garden Center call Marilyn Sommer at (216) 721-1600.

☐ Please register me for the Flower Arranger's Symposium to be held October 9, 9:30 a.m. to 3:00 p.m. at the Garden Center of Greater Cleveland. I have enclosed a check for:

☐ \$78 (AHS or Garden Center member) ☐ \$88 (non-member)

Name

Address

City State Zip

Phone (day) (evening)

Registrations must be received by October 1, 1990.

Thank You!

We wish to acknowledge the cooperation of the following special friends of the American Horticultural Society. These individuals, nurseries, and businesses have supported the goals and continued growth of AHS by distributing Society information and membership materials to their customers. The staff and Board of Directors wish to send very special thanks to these participants in the 1990 AHS Membership Program!

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Gardener's Bookshelf

Parsnips in the Snow

Fix yourself a tall glass of iced tea or settle back in your hammock with an ice-cold beer for a down-home conversation with a few of the Midwest's most passionate vegetable gardeners. Jane Anne Staw and Mary Swander have written a wonderful book for a lazy hot summer day. It's subtitled, "Talks with Midwestern Gardeners," and their backgrounds are as varied as their experiences and the vegetables they grow.

There's Dixie Peterson who gardens organically because she has a chemically induced illness, and who cans her garden bounty "as much for beauty as for function...I would can green beans with two perfect rows on top of each other, all the way around. And with pickles, I would get them exactly the same size, and layer them in two rows around the pint jar," she says. "I love looking at my canning on the shelves. It's really an art. And it heals me to see my own work around because I think we've lost something important when other people do everything for us."

Or Bill Hatke who left academia to garden for a living: "I don't plow my garden and I don't till. I work the ground by hand. People say, 'What do you mean, you work the garden by hand? Do you really go out there and get on your hands and knees?' No, I use a hoe and a rake and a shovel, for crying out loud! I just don't use any motorized mechanisms. But not at all because I romanticize rural life. Only

because my goal is to save money. That's why I don't fertilize, and that's why I don't irrigate, either. That's something that costs. If it dies, it dies."

But my favorites are perhaps Ann and Eric Weir who, like my husband and I, rarely seem to agree on a gardening philosophy: "Eric's real fussy about the garden. He likes the rows to be cut down with razor-sharp edges and everything to be picked on schedule. I think that streak is inherited from his grandfather. And he really tends to get carried away with this weeding...I can't garden that way. I like to have dill just growing up in the middle of everything. And cosmos all over the place."

I found many friends in the pages of *Parsnips in the Snow*. I'm sure you will too.

By Jane Anne Staw and Mary Swander. University of Iowa Press, Iowa City, Iowa. 1990. 205 pages. Black-and-white photographs. Publisher's price: hardcover, \$24.95; softcover, \$12.50. AHS member price: hardcover, \$21.25; softcover, \$10.50.

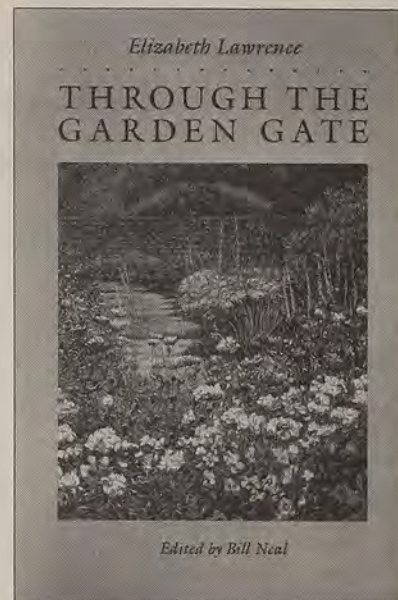
—Mary Beth Wiesner

Through the Garden Gate

Before she died in 1985, Elizabeth Lawrence wrote 720 Sunday columns for the Charlotte, North Carolina, *Observer*. I envy those who knew Lawrence and were able to read her columns when they appeared, but luckily for me and the others who didn't find her on the pages of the *Observer*, Bill Neal has gathered 144 of these columns (written between 1957 and 1971) in *Through the Garden Gate*.

Lawrence was the first woman to receive a degree in landscape architecture from the North Carolina State College School of Design and her own gardens in Raleigh and Charlotte were legendary. Many may know Lawrence from her garden books, which include *A Southern Garden*, *The Little Bulbs*, and *Gardening for Love*.

The *Observer* columns cover a fascinating array of subjects—plant history and folklore, garden books, landscape design, and plant culture are well represented. Lawrence quotes a myriad of sources—fellow gardeners are plentiful (Vita Sackville-West, Gertrude Jekyll, and friend and neighbor Elizabeth Clarkson each make several appearances) but



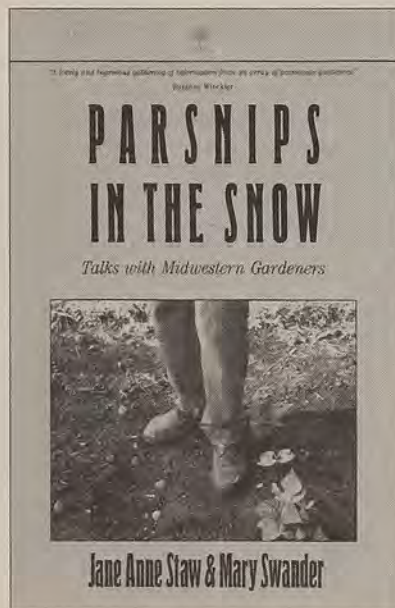
Lawrence also finds room for passages from the works of Shakespeare, Tennyson, and Wordsworth. Her gardening successes, failures, and discoveries are as fresh today as they were 20 and 30 years ago.

In one of her last essays Lawrence wrote: "Gardens are so perishable; they live on only in books and letters; but what has gone before is not lost; the future is the past entered by another door." Happily Lawrence's gardens and writing will live on in the pages of *Through the Garden Gate*.

By Elizabeth Lawrence. Edited by Bill Neal. University of North Carolina Press, Chapel Hill, North Carolina, 1990. 256 pages. Publisher's price: hardcover, \$19.95. AHS member price: \$16.95. —M. B. W.

Ooops!

Due to an unexpected high demand for our magazine, our April press run exceeded the number of Spring Garden Book Catalogs we had available to insert in that issue, as indicated on the magazine's cover. If you haven't received your catalog—with over 700 titles, all discounted 15 to 50 percent—please call us at (800) 777-7931 (in Virginia call [703] 768-5700) or write to AHS Book Service, 7931 East Boulevard Drive, Alexandria, VA 22308.



A Weaver's Garden

In easy-to-read and highly entertaining text Rita Buchanan has provided detailed information for gardeners who weave and weavers who garden, but gardeners interested in growing interesting and historic plants will also find much of interest here.

Chapters cover Plant Fibers for Spinning and Stuffing, Dyes from Plants, Soap Plants for Cleaning Textiles, Fragrant Plants to Scent and Protect Textiles, and Plant Materials Used to Make Textile Tools. Each chapter is packed with information, from historical background, folklore, and the uses of plants and textiles to growing tips, harvesting techniques, preparing plants for weaving, and methods of dyeing textiles and making soap with plant materials. Detailed reading lists follow each chapter.

Buchanan also provides some practical information such as how much space is needed to grow enough cotton plants to weave cloth for a blouse (a patch about

20 feet square should do the trick) and how much dyer's broom (*Genista tinctoria*) is needed to dye four ounces of wool yellow (about one gallon of chopped stems).

The plant list is impressive, and although Buchanan readily admits that most of the plants aren't usually available at local garden centers and nurseries, she does provide a list of mail-order seed and plant suppliers and a list of seed exchanges that will assist those trying to track down sources.

Experienced gardeners can skip the Creating a Garden section, but Buchanan does provide four helpful garden plans for different size gardens. She also lists public gardens, in 12 states, that display examples of fiber, dye, soap, scent, and tool plants. The glossary, pronunciation guide, and index also are helpful.

By Rita Buchanan. Interweave Press, Inc., Loveland, Colorado. 1987. 230 pages. Line drawings and color photographs. Publisher's price: hardcover, \$16.95. AHS member price: \$14.40. —M. B. W.



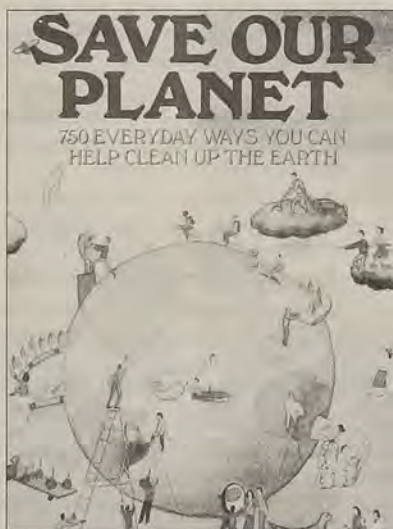
Save Our Planet: 750 Everyday Ways You Can Help Clean Up the Earth

In this year of the environment, conservation how-to guides are popping up like summer daisies. One of the most attractive and useful of these handbooks is Diane MacEachern's *Save Our Planet*.

After an introduction describing the major environmental problems plaguing the Earth, the book is divided into nine chapters, each representing a different sphere of life (home, garden, garage, supermarket, school, office, community, apartment, and vacations). MacEachern stuffs these chapters full of information on how individuals can stem environmental pollution by modifying their lifestyles. There is also an appendix listing publications, organic gardening companies, and Environmental Protection Agency regional offices, and a checklist of environmental organizations.

Although few of MacEachern's tips are strikingly original, it is handy to have them gathered into one volume. She also does a good job of explaining the reasons for each suggestion. We should eat less meat, for example, not just for personal health: a low-meat diet conserves natural resources like soil, raw materials, fossil fuel, and water.

The gardening chapter touches on several topics: organic gardening, composting, water conservation, landscaping, insect control, and gardening tools. Sidebars highlight beneficial insect-attracting plants, safe pesticides, organic insect controls for



the lawn, and sources for supplies and additional information. My favorite gardening tip: throw away your sprinklers. They waste water through evaporation and should be substituted with rubber soaker hoses.

This section serves as a competent introduction to environmentally conscious gardening, but there is one important omission. Although MacEachern devotes several pages to sensible lawn care, she neglects to critique the American attachment to turfgrass, which consumes more than its share of water, fertilizers, and herbicides.

By Diane MacEachern. Bantam Doubleday Dell Publishers, New York, New York. 1990. 210 pages. Publisher's price: softcover, \$9.95. AHS member price: \$8.45.

—Thomas M. Barrett

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Gardener's Dateline

Northeast

♦ **Through September 15. The Healing Past—Medicinal Plants from the Late Biblical Period Exhibit.** Rodef Shalom Biblical Botanical Garden, 4905 Fifth Ave., Pittsburgh, PA 15213. Information: Irene Jacob (412) 621-6566.

♦ **July 12-14. American Hemerocallis Society National Convention.** Delaware Valley Daylily Society, Sheraton Valley Forge, King of Prussia, Pennsylvania. Information: Carol McConomy (215) 642-7620 or Joan Clark (215) 644-1659.

♦ **July 19. The 43rd Annual Open House and Garden Day.** St. Thomas Church, Chestnut St., Camden, Maine. Sponsored by the Camden Garden Club. Information: Margaret McLeod (207) 236-4725.

♦ **July 24-26. Penn Allied Nursery Trade Show.** Valley Forge Convention and Exhibit Center, King of Prussia, Pennsylvania. Sponsored by Pennsylvania Nurserymen's Association, Inc. Information: (717) 238-1673.

♦ **Aug. 3-5. The 16th Annual Natural Organic Farmers Association Summer Conference and Celebration of Rural Life.** "Organic Agriculture: Sowing the Seeds for a New Decade," presented by the Natural Organic Farmer's Association. Hampshire College, Amherst, Massachusetts. Information: Jack Kittredge and Julie Rawson, 1990 NOFA Summer Conference, RFD #2, Sheldon Rd., Barre, MA 01005, (508) 355-2853.

♦ **Aug. 4-5. Sturbridge Village Garden Weekend.** Sturbridge, Massachusetts. Featuring a lecture on "Early American Plants and Gardens" by Fred McGourty. Information: (508) 347-3362, TDD (508) 347-5383.

Southeast

♦ **July 12-16. American Association of Nurserymen/Tennessee Nurserymen's Association Annual Convention and Nursery Industry Exposition.** Opryland Hotel, Nashville, Tennessee. Keynote address by U.S. Assistant Secretary of Agriculture Charles E. Hess. Information: Joel Albizo (202) 789-2900.

♦ **July 26-28. Landscaping with Native Plants Conference.** Western Carolina University, Cullowhee, North Carolina. Information: Sue DeBord, Office of Continuing Education and Summer School, Western Carolina University, Cullowhee, NC 28723, (704) 227-7397.

♦ **July 29-31. International Lawn, Garden and Power Equipment EXPO 90.** Louisville, Kentucky. Information: EXPO 90, P.O. Box 70465, Louisville, KY 40270 or call (800) 558-8767. In Kentucky or outside the continental U.S. call (502) 582-1672.

♦ **Aug. 1. Fern Propagation Workshop.** Celia Rutt, horticulturist, State Arboretum of Virginia. Slide Lecture/Demonstration. Administration Building Classroom, U.S. National Arboretum, 3501 New York Ave., N.E., Washington, DC. Information: Mary Ann Jarvis (202) 475-4857.

♦ **Aug. 22. Slide Lecture on Exotic Thailand.** Gloria Houser, landscape design critic, flower show judge. Administration Building Classroom, U.S. National Arboretum, 3501 New York Ave., N.E., Washington, DC 20002. Information: Mary Ann Jarvis (202) 475-4857.

North Central

♦ **Aug. 4-8. 1990 American and Canadian Phytopathological Societies Joint Meeting.** Grand Convention Center and Amway Grand Plaza Hotel, Grand Rapids, Michigan. Information: Joan M. Schimml, Meetings Coordinator, American Phytopathological Society, 3340 Pilot Knob Rd., Saint Paul, MN 55121, (612) 454-7250.

Southwest

♦ **July 19, 21, 22. Wildflower Photography Lecture and Workshop.** Led by John D. Smithers. Denver Botanic Gardens. Information: (303) 331-4000.

♦ **Aug. 5-7. American Horticultural Therapy Association Annual Conference.** "Protecting Health and Habitat in the 90s." Holiday Inn Midtown, 2020 Menaul Blvd. N.E., Albuquerque, New Mexico. Information: American Horticultural Therapy Association, 9220 Wightman Rd., Suite 300, Gaithersburg, MD 20879, (800) 634-1603.

Orlando Hosts Water Lily Society

International Water Lily Society members will get a chance to enjoy the pleasures of Orlando, Florida, during the society's annual meeting August 21-26. The meeting begins with a presymposium overnight tour to the University of Florida and a boat tour on the famous Suwannee River, and includes two days of educational sessions and two additional local tours.

Educational programs include "New Introductions for 1991," "Swimming Pools Make Great Garden Pools," "Hot Sex and Water Lilies," "Water Gardening—A South American Perspective," and "Growing Water Lilies under Artificial Lighting." The meeting also includes tours to Leu Gardens, hybridizer Bill Frase's private aquatic garden; Slocum Water Gardens; and Cypress Gardens.

The meeting will be held at the Howard Johnson Florida Center Hotel, adjacent to the new Universal Studios, and convenient to both Walt Disney World and Sea World. For more information contact: Jack Siebenthaler, Chairman, International Water Lily Society Annual Meeting, P.O. Box 6524, Clearwater, FL 34618, (813) 446-3356.



Tropical lily

Events at AHS

Members of the Old Dominion Chrysanthemum Society will present a chrysanthemum teach-in at River Farm on August 19. The event begins at 2 p.m. and includes demonstrations on disbudding along with hints for shading young plants and other techniques for growing show-stopping blooms. The event is open to the public; no registration is required. In case of rain the demonstration will be held at 2 p.m. August 26.

During the month of September River Farm will play host to a one-woman art show. Isabel Spann will exhibit her floral and landscape paintings throughout the ballroom and parlor. Spann, a resident of the Mount Vernon area of Virginia, paints in contrasting styles using watercolors and oils and acrylics.

River Farm is open Monday through Friday from 8:30 a.m. to 5 p.m. The art exhibit can also be viewed on Saturdays in September from 12 noon to 4 p.m. For more information call River Farm at (703) 768-5700 or (800) 777-7931.

ground covers. Information: (818) 405-2141.

♦ **Aug. 18-19. Fifth Annual Inter-City Cactus and Succulent Show and Plant Sale.** The Los Angeles State and County Arboretum, 301 N. Baldwin Ave., Arcadia, California. Sponsored by the Los Angeles, Long Beach, and San Gabriel Valley Cactus and Succulent Societies. Information: Larry Grammer (213) 599-0856, Woody Minnich (805) 944-2784, or Fred Hutlesz (213) 934-3597.

♦ **Aug. 18-26. Southland Home and Garden Show.** Anaheim Convention Center, Anaheim, California. Information: (714) 635-8330.

♦ **Aug. 25-26. Seattle Flower Show, "A Blooming Festival."** Seattle Center Exhibition Hall. Sponsored by the Puget Sound Bank and the Puget Sound Dahlia Association. Information: (206) 863-0542.

♦ **Sept. 6. Talk on Ornamental Gingers.** The Huntington, 1151 Oxford Rd., San Marino, California. Slide lecture by Ron Harris, curator of the Huntington's Palm and Jungle Gardens. Information: (818) 405-2141.

♦ **Aug. 12-15. CONSERV 90 Conference and Exposition.** Phoenix, Arizona. Sponsored by the American Water Works Association, American Society of Civil Engineers, American Water Resources Association, and the National Water Well Association. Information: Sharron Travis, 6375 Riverside Dr., Dublin, OH 43017, (614) 761-1711.

West Coast

♦ **July 18-Aug. 11. Colorful, Carefree Gardening/Summer Landscape Show.** Pier 39, San Francisco, California. Experienced landscape gardeners lead walking tours of Pier 39's 45 acres every Wednesday and Saturday. Information: (415) 391-0850.

♦ **July 28-29. Begonia Show.** Los Angeles State and County Arboretum, 301 N. Baldwin Ave., Arcadia, California. Sponsored by the San Gabriel Branch of the American Begonia Society. Information: LuAnn Munns (818) 446-8251.

♦ **Aug. 2. Ground Covers.** San Marino, California. Ann Richardson, curator of the Huntington's Camellia and Japanese Gardens will lecture on

International

♦ **Through Aug. 12. Museum of London exhibition "London's Pride: The History of the Capital's Gardens."** Information: Museum of London, London Wall, London EC2Y 5HN, 01 600 3699, FAX 01 600 1058.

♦ **July 25-27. American Sod Producers Association's 1990 Summer Convention and Field Days.** Manderley Sod Farm, Kemptville, Ontario, Canada. Information: American Sod Producers Association, 1855A Hicks Rd., Rolling Meadows, IL 60008, (708) 705-9898.

♦ **Aug. 27-Sept. 1. The 23rd International Horticultural Congress.** Florence, Italy. Information: Congress Secretariat, c/o Società Orticola Italiana, Via Donizetti 6, 50144 Firenze, Italy. Phone (5) 213709, FAX (55) 219453.

♦ **Sept. 5-17. The 13th World Orchid Conference.** Auckland, New Zealand. Information: New Zealand Trade Development Board, 1 Sansome St., Suite 810, San Francisco, CA 94104, (415) 788-7444, FAX (415) 788-1086.

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Travel/Study Trips for the AHS Gardener

September 20-October 3, 1990 Castles and Gardens of Scotland

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Passages Unlimited, 2 Oliver Street, Eighth Floor, Boston, MA 02109, (800) 232-2939

November 10-17, 1990 Gardens of the Colonial South

Board the *Nantucket Clipper* in Florida and travel north to old Southern gardens on Sea Island, private gardens in Savannah and Hilton Head, and the significant and historic gardens of Charleston. You'll view splendid marshlands while cruising the Intracoastal Waterway. Join Past AHS President Carolyn Marsh Lindsay and Bob Lindsay on board this yacht cruise.

Leonard Haertter Travel Company, 7922 Bonhomme Avenue, Saint Louis, MO 63105, (800) 942-6666 (in Missouri [314] 721-6200)

January 23-February 5, 1991 Egypt and Nile Cruise

Explore the earliest of the Western civilizations and the life-giving influence of the Nile River. The itinerary includes Cairo, Luxor, and Abu Simbel as well as a five-day cruise on the Upper Nile from Luxor to Aswan on board the *Nile Goddess*. Visit numerous historic gardens, including the Manial Palace Gardens in Cairo and the botanical garden on Lord Horatio Herbert Kitchener Island at Aswan. Program leaders are Carolyn Marsh Lindsay and Bob Lindsay. Mrs. Lindsay is a Past President of AHS.

Leonard Haertter Travel Company, 7922 Bonhomme Avenue, Saint Louis, MO 63105, (800) 942-6666 (in Missouri [314] 721-6200)

April 16-21, 1991 AHS Annual Meeting in Birmingham

Enjoy the beauty of Birmingham, Alabama, during the American Horticultural Society's 1991 Annual Meeting. The meeting will focus on gardening classes and clinics held at the Birmingham Botanic Garden; horticultural tours will highlight some of Birmingham's finest public and private gardens. Post-meeting tours will feature fabulous gardens throughout Alabama as well as a riverboat cruise up the beautiful Mississippi River.

Classifieds

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California Bill May Affect All Gardeners

A broad environmental measure proposed by a group of California politicians and environmentalists could serve as a model for similar laws throughout the country, some of its supporters predict.

The Environmental Protection Initiative of 1990, known as "Big Green" among environmentalists, is directed at global warming, contamination of food, and pollution of coastal waters. It would phase out all agricultural pesticides that cause cancer or birth defects, ban new oil drilling off the California coast, set up a \$500 million state cleanup fund for oil spills, cut carbon dioxide emissions by 40 percent, protect ancient redwood stands from being cleared, and create a position for an elected environmental advocate to enforce the law.

The measure was proposed by representatives of the Sierra Club, the League of Conservation Voters, the Natural Resources Defense Council, the National Toxics Campaign, and Citizens for a Better Environment along with Lieutenant Governor Leo McCarthy and Attorney General John Van de Kamp—a Democratic candidate for governor and son of former AHS First Vice President, Mrs. Harry J. Van de Kamp.

The initiative has drawn opposition from agricultural and chemical industries and even some environmentalists say it tries to do too much, but the public's growing concern for the environment gives it a strong chance for passage. Officials of the Natural Resources Defense Council say its impact may not stop in California. Council attorney Al Meyerhoff told the *New York Times*,

"This measure recognizes these issues cannot be dealt with piecemeal. California is going to set the stage for the battle over the environment." Paul J. Allen, the group's director of communications, was quoted by the *Washington Post* as calling the measure "unique, unprecedented" and saying that "It could have the effect of snowballing the rest of the nation."

Among the pesticides and herbicides that would be phased out by 1996 are Alachlor, Captan, 1,3-Dichloropropene, and Aldicarb.

Captan is used by the home gardener as a fungicide on vegetables, fruits, and ornamentals; as a seed protectant; as a dip for corns and tubers; and for blackspot on roses. Alachlor, a pre-emergent herbicide, is used mainly by farmers. Aldicarb and 1,3-Dichloropropene are both dangerous pesticides used by some in the nursery industry and are not cleared for home use.

California farmers, and anyone bringing produce into the state, would have to reduce pesticide residues to a level considered safe for children. The time between pesticide use and allowing farm workers into a field would be increased, and pesticide use records would be posted. A three-year extension could be obtained if alternative chemicals cannot be found, resulting in "severe economic hardship" to the state's agriculture industry.

By late April, supporters had gathered 700,000 signatures supporting the measure—200,000 more than it needed to be assured a place on the November ballot. It must receive more than half of the votes cast to become law.

Opponents of "Big Green" say that it will increase water and energy costs and could disrupt California agriculture. The *Post* cited an industry-funded study conducted by a Washington-based consulting firm, GRC Economics, indicating that Big Green will result in 40 to 50 percent higher prices for fruit and vegetables and "189,000 fewer" agricultural jobs because of lack of substitutes for some banned pesticides." Also cited was an industry-based report by Spectrum Economics, Inc., of San Francisco, California, denying scientific evidence for higher mortality rates due to contaminated drinking water or pesticide residues on foods.

The Big Green initiative is supported by San Francisco Mayor Diane Feinstein, the Democrat who opposed Van de Kamp in the primary election. Republican Senator Pete Wilson, also a candidate for governor, supports many of the initiatives outlined in Big Green, but opposes the environmental advocate's position that would be created by the initiative.

Campaigning for the initiative may cost \$3 million and opponents of the measure will have to spend at least that much to defeat it. Californians for Responsible Food Laws (CAREFUL) has created a competing measure that "would increase monitoring of harm from pesticides but refrain from an outright ban." CAREFUL's measure, which had collected 400,000 signatures at press time, is supported by the agricultural industry. If both measures pass in the November election but



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