

NORTH
CAROLINA

wild flower

PRESERVATION
SOCIETY, INC.



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**NORTH CAROLINA WILD FLOWER
PRESERVATION SOCIETY, INCORPORATED**

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of
North Carolina Wild Flower Preservation Society
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Dicentra canadensis

Editor's Note: We are looking for sources of material for future NEWSLETTERS. The western part of the state is so rich in interesting plant material that we hope to have you "westerners" tell us more about it.

We plan to initiate a feature on unique forms of familiar plants. Do you have a story to tell about one?

Our next deadline is August 15.

Front Cover: Pencil Study of *Magnolia fraseri* by Jim Ward who is curator of the habitat gardens and the plant families gardens of the North Carolina Botanical Garden.

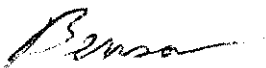
PRESIDENT'S MESSAGE

1. I want to express the Society's gratitude to Jeannie Kraus, Julie Moore, and Dr. Ernie Seneca for making our trip to Hammocks Beach so special. In addition, Julian Wooten and Charles Peterson, with help from Julie and Jeannie, made our Sunday morning trip to Camp Lejeune delightful in spite of the dramatic change in the weather. Finally, Steve Warner's hospitality at Hadnot Creek Farm capped one of the finest WFS weekends in memory.

2. At our 1989 Fall Meeting, the membership ratified the new revision of the Bylaws. For those who missed them, they were published in the last issue of the *Newsletter*; copies are also available from me if needed. These are the operating guidelines for the Society, and, although we operate informally, we do strive to stay within our Bylaws.

3. We also passed out Member Information Sheets at the Fall Meeting and received valuable feedback from those responding. The 1990 Spring Meeting announcement will include a copy of this information sheet. Please participate and return your Member Information Sheet.

4. Elections will be held at our 1990 Spring Meeting. The Nominating Committee consists of Emily Allen, Jeannie Kraus, and Linda Lamm.



NCWFPS PAST PRESIDENTS

Mrs. Herbert Smith	1951-52
Mr. J.A. Warren	1952-1954
Mrs. Paul Spencer	1954-56
Mr. Lionel Melvin	1956-58
Mrs. Carl Pegg	1958-60
Mr. Walter Braxton	1960-62
Mr. Gordon Butler	1962-66
Dr. H. Roland Totten	1966-68
Dr. Herbert Hechenbleikner	1968-70
Dr. Marjorie Newell	1970-72
Mr. Thomas Shinn	1972-74
Mrs. Pearson Stewart	1974-76
Mr. Ken Moore	1976-78
Mrs. O.G. Allen	1978-82
Mr. Tom Howard	1982-84
Dr. G. Ray Noggle	1984-88

Past presidents are permanent advisors and members of the board of directors.

CALENDAR OF EVENTS

- February 25 WFS Board of Directors meeting at the home of Nancy Stronach in Wilson. Lunch at noon; business meeting at 1 PM. *We invite all members of the Society to participate; contact Benson Kirkman for more information.*
- March 4 Special Orientation/Training Hike at the White Pines Natural Area. Open to anyone willing to be a hike leader for the Triangle Land Conservancy (or the Wild Flower Society) as well as experienced leaders who will share their expertise. Contact Benson Kirkman (859-1187) for more information.
- March 18 March for Parks sponsored by the National Parks and Conservation Association—"an annual event that provides people who love open spaces, waterways, scenic gardens, parklands, trails and other special places with a tangible opportunity to demonstrate their support." This is an "official event of the Earth Day celebration (April 22, 1990), and recognized as a premiere fund raiser by the National Celebration of the Outdoors (April 22-29).
- April 7-8 NCWFPS Spring Meeting—Juniper Springs Church Natural Area, Raven Rock State Park, White Pines Natural Area; elections and program by Ed Swab.
- April 22 Earth Day Celebration—20th anniversary of this historic event associated with the beginnings of a new environmental consciousness. Special activities being planned by groups in March and April in conjunction with the anniversary.
- July 26-28 1990 Landscaping with Native Plants Conference. Contact Division of Continuing Education and Summer School, Western Carolina University, Cullowhee, NC 28723 for brochure. Register early; this is a popular event.
- August 17-19 Eastern Native Plant Alliance (ENPA) Annual Meeting at Holden Arboretum, Mentor, OH. Contact Ken Moore or Benson Kirkman for more information.

SPECIAL ATTENTION

1990 SPRING MEETING, APRIL 7-8

Mark your calendars now! Our Spring Meeting promises to be another magic weekend. We will hold our elections and visit three very special *natural gardens*:

1. Juniper Springs Church Natural Area, Lee County.

The Juniper Springs drainage is characterized by a very poorly drained

streamhead comprised of saturated organic/mineral soils and containing an old growth stand of Atlantic white cedar-tulip poplar-swamp black gum. This outstanding white cedar stand is at the westernmost edge of the range in North Carolina and contains trees up to 22 inches in diameter and over 200 years old. The 10-15 acre coverage containing these specimens makes this one of the finest white cedar stands left in North Carolina. Numerous shrubs and small trees in the understory include gallberry, sweet bay, red bay, American holly, sweet pepperbush, witch-alder, and blueberry. Spaghnum carpets and scattered forbs add a touch of mystical beauty.

The slopes adjacent to the cedar bog are characterized by a longleaf pine overstory (very scattered because of the removal of many trees) and blackjack oak dominated understory. While scattered old flat-topped longleaves are still present in the unusual rocky sand, much of the original growth pines are represented by scattered stumps with turpentine "boxes" carved into their trunks. An impressive number of scarred living trees are also present. The understory and ground cover layers are very characteristic of a disappearing community type.

Rare plant species at this site include Collins' sedge (*Carex collinsii*), bog spicebush (*Lindera subcoriacea*), and nestronia (*Nestronia umbellula*).

—taken from a Natural Heritage report
prepared by Julie Moore

2. Raven Rock State Park, Harnett County

This beautiful park gets its name from the scenic quartzite cliffs, 120 to 150 feet in height, carved by the Cape Fear River. Many casual visitors are content with a quick hike to the cliffs and a glimpse of the mountain laurel and rhododendron, or a few of the spring wild flowers. Raven Rock has a rich diversity of topography and habitats in its 2,847 acres, however, and over 15 miles of trails to explore the even richer diversity of flora and fauna.

The following excerpts from *State Parks of North Carolina* by Biggs and Parnell should whet your appetite:

"One of the real joys of a spring visit...is the abundance of wildflowers...visitors may find extensive stands of Dutchman's breeches, bloodroot, saxifrage, spring beauty, trailing arbutus, Solomon's seal, bellwort....The wildflowers are often mixed with maidenhair ferns, lichens, liverworts, and mosses....The drier oak/pine forests and other plant communities can also be spectacular in the spring, with understories of flowering dogwood and carpets of bird-foot violets."

3. White Pines Natural Area, Chatham County

In December 1987, the Triangle Land Conservancy completed the purchase of 136 acres (White Pines I) of this unique area centered on southeasternmost disjunct stand of eastern white pine. Now, TLC is purchasing an additional 106.4 acres known as White Pines II. The Wild Flower Society and many of our members have contributed to these efforts. In June 1989, the entire 242.4 acres became a dedicated North Carolina Nature Preserve, the first in the Piedmont.

Many of the special features of this site have been discussed in previous *Newsletter* articles, but here are a few tidbits about this *natural garden* to tempt you:

- a. This is the only known location where white pine and longleaf pine occur

together in nature.

b. This is also the home of Mercer's pink breeches, the rare pink form of Dutchman's breeches named for Mercer Hubbard.

c. A trip to White Pines in the spring has been equated to a trip to the Great Smoky Mountains.

d. Several "experts" have predicted an unusually spectacular spring for wild flowers at White Pines after the moist growing season in 1989. The diversity and abundance at White Pines make a visit spectacular even in an "average" year, so we shouldn't be disappointed.

e. Among our leaders will be Ed Swab, graduate student and naturalist conducting the floristic study at White Pines. *Ed is a recipient of support from the Tom and Bruce Shinn Fund and will present the program on Saturday evening.*

PARK HAS QUIET MAN TO THANK

It's likely that most of the 32,000 people now working in Research Triangle Park have never heard of Pearson Stewart. They weren't here 30 years ago when the park was getting going. When they look out their workplace windows, they have no idea he's the man they have to thank that they see restful green vistas instead of jumbled cityscapes.

Mr. Stewart just retired at 70 from the Research Triangle Foundation's vice presidency for planning. He took the job in 1958, when the park was barely more than a gleam in the eye of Gov. Luther Hodges, banker Archie Davis and a few others.

No one knew then what actual shape the park would take. No one had ever designed such a thing from scratch before. It was Pearson Stewart, Massachusetts native and MIT graduate, who wrote the literal ground rules for how it would emerge from the scrub-pine woods.

His most revolutionary and visionary rule was that buildings couldn't occupy more than 15 percent of a site. In hindsight, it's clear that no other single decision did more to assure that the park would not only be a class act but would go on looking like one.

Physical planning is only half of the legacy of Mr. Stewart's career here. It was also his job to set up some mechanism to coordinate planning by the three Triangle counties, their neighbors and their localities so that water, sewer, transportation and other services wouldn't grow by the piecemeal-chaos route.

As first director of the Research Triangle Regional Planning Commission, which became today's Triangle J Council of Governments, he saw that group win more success than many regional-planning efforts because it involved mayors and other top decision-makers.

Mr. Stewart is a low-profile fellow who never sought glory, nor will he in retirement. But Triangle dwellers should be glad to know he will still have a hand in the process as a consultant. This should help guarantee that the views from tomorrow's Park windows as well as today's will be big on natural beauty and scanty on ugliness. The more the Triangle grows, the more that's worth.

*Editorial from News and Observer
January 13, 1990*

MINUTES OF THE FALL 1989 BOARD MEETING OF THE NORTH CAROLINA WILD FLOWER PRESERVATION SOCIETY

The Board Meeting of the N.C. Wild Flower Preservation Society was held at the Totten Center at the UNC Botanical Garden on August 27, 1989, with President Benson Kirkman presiding.

The Board voted unanimously to rename the Scholarship Fund the Tom and Bruce Shinn Scholarship Fund. Gretchen Cozart, Treasurer, reported a balance of \$8,599.78 in that account and a balance of \$2,804.32 in the Society's checking account.

The Fall Membership Meeting will be Oct. 7 & 8 at Hammock's Beach State Park. Sam Bland—Park Superintendent, Dr. Ernest Seneca, Julie Moore, Jeannie Kraus, Becky Marti and Tom Howard will lead the group.

Dr. Noggle reported a balance of \$4,000 in the plant propagation handbook account. He is to contact printers to obtain estimates for reprinting of the book. Jane Welshmer and Roger Boyles are to write a chapter on fern propagation to be included in the next edition.

Emily Allen, Jeannie Kraus and Linda Lamm were named to a nominating committee. Emily requested that the Society print an interest inventory to be presented to members at the Fall meeting. From this, the committee would learn who is interested in serving on the Board.

Ed Swab (\$700) and Lisa Huff (\$100) used their monies from the Tom and Bruce Shinn Scholarship Fund to finish projects at the White Pines Natural Area. There is still concern over the lack of interested students to do propagation studies. The Board feels that the scope of the Fund should be broadened to include any worthy project dealing with native plants. The scholarship committee will try to do this in the future.

Linda Lamm and Nancy Stronach are to obtain estimates for the cost of printing notecards. The covers of the notecards will be plant illustrations chosen from previous newsletters. Linda and Nancy will chose the illustrations and make a presentation at the next Board meeting.

Dr. Noggle, Julie Moore, Benson Kirkman and Tom Howard volunteered to serve on a committee to oversee the revision of Dr. Wells' *The Natural Gardens of North Carolina*.

The meeting was adjourned after the Board voted to make donations to the following organizations:

NC Botanical Garden Foundation—\$250 plus \$100 donated by Mrs. Eleanor Pegg

Triangle Land Conservancy—total of \$200

(White Pines \$100 and Flower Hill \$100)

Center for Plant Conservation—\$25

National Wildflower Research Center—\$25

deHart Botanical Garden (Franklin County Nature Preserve)—\$25

Conservation Council of NC—\$100



Elvira Howard, Secretary

HOMAGE TO THE SOUTHERN MAGNOLIA

"Among the many tree species that make up the vast forests of North America east of the Mississippi, none is as remarkable by its majestic form, superb foliage, and magnificent flowers as *Magnolia grandiflora*." So was Southern Magnolia described nearly two centuries ago by Francois-Andre Michaux, early French botanical explorer in this country. Today this tree, which has become the very symbol of the South, is given a position of honor and distinction in mild-temperature gardens the world over. It is deservedly the most esteemed of all of the evergreen flowering trees.

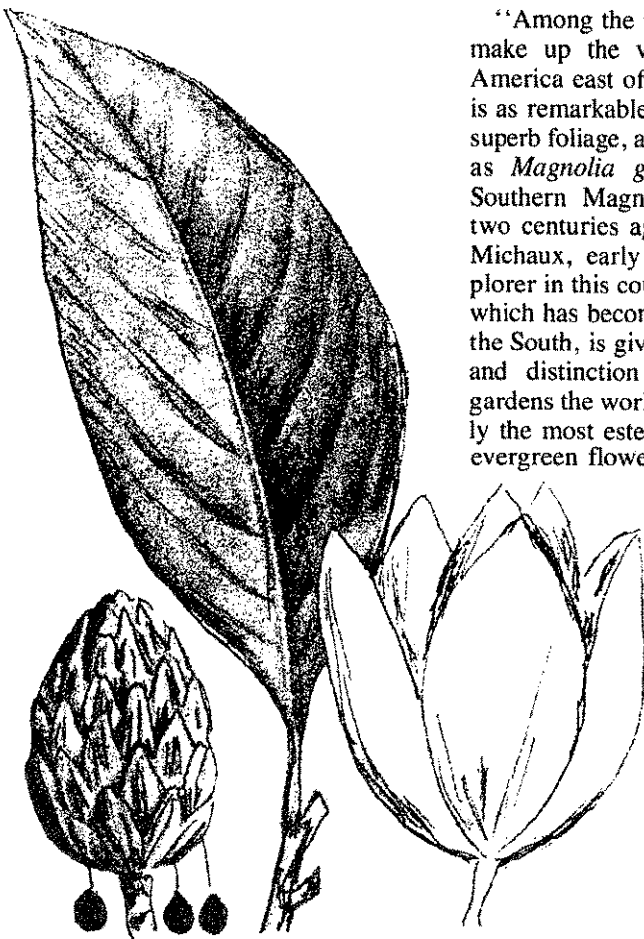
There are in all about 125 species of the genus *Magnolia*. Most of them, about three fourths actually, are native to Asia, living in Himalaya, China, or Japan. The remaining minority, maybe 30 or so, are native to the New World—eastern North America, Central America and the West Indies, and northern South America. Southern Magnolia occurs natively only in the Coastal Plain of the south-

Southern Magnolia.

Pierre-Joseph Redoute's painting for F.-A. Michaux's *Histoire des arbres forestiers de l'Amerique septentrionale*, Vol. 3 (Paris, 1813). Courtesy of the Rare Book Room.

eastern United States. The Coastal Plain formed primarily during the Cretaceous Period, and was always very tropical until its relatively recent climatic change to subtropical-temperate.

During the 17th and 18th centuries, the major European powers sent botanical explorers all over the world in search of new plants. These field naturalists sent home thousands of dried specimens for scientific study as well as the seeds of all plants they suspected of having economic or horticultural value. The first collector of Southern Magnolia is not recorded, but Rene Desfontaines gave an ear-



ly account of its introduction to France in his rambling *Histoire des arbres et arbrisseaux* (Paris, 1809). The first seedlings had been grown there at the beginning of the 18th century, but they were not thought to be hardy. They were consequently cultivated in tubs and wintered in orangeries, slightly heated buildings with glass on only the south walls, the antecedents of the modern greenhouse. But by 1737, a fine specimen was growing and flowering annually outdoors in a garden near Nantes. Writing about this same tree in *Arboretum et Fruticetum Britannicum* (London, 1854), J.C. Loudon related that about 1760 Louis XV's head gardeners had the unhappy task of telling their surely-disappointed monarch that it was too big to transplant to Versailles.

The 18th-century obsession of the European aristocracy for foreign trees and shrubs to ornament their estates is reflected in a trivial but revealing incident involving no less a personage than Thomas Jefferson. In 1789, just as he was preparing to leave France after several years of diplomatic service to his country, Jefferson received a sudden request from his friend Sophie de Lalive, the Comtesse d'Houdetot and one-time object of Jean-Jacques Rousseau's affection. And what did the good countess want? Why, seeds of Southern Magnolia, of course, (she called it *Laurier tulipier*) and of about 20 other things that she had in mind as well. Historian Gilbert Chimard, in his book *Les Amities américaines de Madame d'Houdetot* (Paris, 1924), transcribed her wish-list of species enumerated by their common French names to which, on the same sheet, Jefferson scribbled the corresponding but then-still-new Linnean scientific ones. In even this casual encounter, Jefferson revealed the breadth of his knowledge of the science of his day.

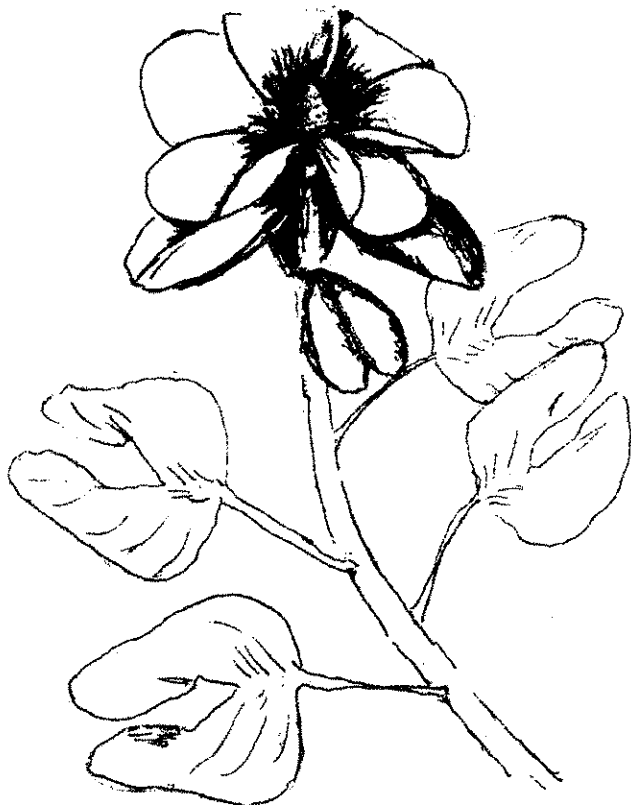
The angiosperms or flowering plants, which now dominate the world's vegetation, appeared suddenly in the early Cretaceous, about 120 million years ago. The fossil record tells us precious little about their ancestry, and botanists are still far from unanimity on the evolutionary relationships of the major groups. They have long agreed, however, that a diversity of indirect evidence indicates



Southern Magnolia.

From C.S. Sargent's *Manual of the Trees of North America*
(Boston, 1905)

that *Magnolia* and other members of the Order Magnoliales most closely resemble what the first-evolved flowering plants must have been. Their flower parts—sepals, petals, stamens, and carpels—are arranged spirally on a central axis instead of being attached in successive tiers as in most flowering plants. Conclusive evidence of the *Magnolia*-like nature of the earliest angiosperms came only recently with the discovery of some remarkable fossils on a ranch in Kansas. Using plant fragments that he found in 100-million-year-old mid-Cretaceous clays, Professor David Dilcher of Indiana University pieced together an ancient tree that no one else had ever seen before. Just five years ago, Dilcher named it *Archaeanthus* ("first flower"), and published the reconstruction shown here. The flowers of fossil *Archaeanthus* and of extant *Magnolia* are astonishingly similar. In *Archaeanthus* the petals are all attached at one level, but the stamens and carpels are spirally arranged just as they are in all members of the Magnoliales. The significance of the discovery of *Archaeanthus* lies in confirming that *Magnolia*-like flowers were indeed among the first evolved and that, of all the flowering plants today, *Magnolia* and its relatives are unquestionably the most archaic.



Archaeanthus (reconstruction)

The *Magnolia*-like fossil plant recently found in Kansas.

From the *Annals of the Missouri Botanical Garden*, Vol. 71 (1984).

The Gardens have just made an important new planting of Southern Magnolia in the form of a long tree-hedge bordering Flowers Drive. The objective is to spare visitors to the Asiatic Arboretum a view of cars parked beside the Medical Center. For this purpose, the cultivar 'Saint Mary' was selected, not for its well-known precocity of flowering but rather for its exceptionally dense, uniform habit of growth. In less than a decade, the offending vehicles on Flowers Drive will have been edited out of the picture by a line of living fossils.

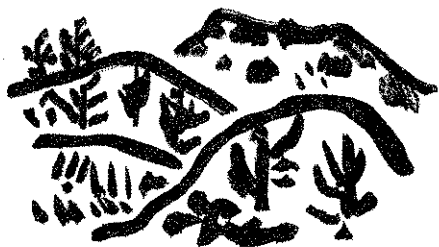
In addition to Southern Magnolia, seven other species of the genus are indigenous to the eastern United States, and you may see them all in the Blomquist Garden of Native Plants. Three are giant forest trees: the Cucumber-tree (*Magnolia acuminata*), the Umbrella-tree (*M. tripetala*), and the Bigleaf Magnolia (*M. macrophylla*). The last-mentioned species is unique in having the largest simple (undivided) leaves of all deciduous trees in the world, leaves that can reach an astonishing yard in length. On the other hand, the little Sweetbay (*M. virginiana*), which is often only a large shrub but ranges as far north as Massachusetts, was the first magnolia introduced to Europe, in the 17th century. As such, it was the main one that Linnaeus had in mind when he named the genus in 1753, honoring Pierre Magnol, professor and director of the botanical garden at Montpellier. This early researcher of the plants of the South of France, by then some 40 years dead, never suspected that his name would be forever associated with some of the most beautiful flowering trees of North America and eastern Asia.

The oriental magnolias get special attention in the 25-acre Asiatic Arboretum now being developed in the Gardens. Most of these species bloom before their leaves appear and are consequently vulnerable to late spring frosts. Seven of the many species and cultivars now in place have already produced a few flowers. The first blossoms of our young trees of *Magnolia heptapeta* and *M. dawsoniana*, for example, foretell a floriferous future. But in spite of the exotics that we're soon to enjoy, Duke Gardens' magnolia advantage will always be in the perfection of our Southern Magnolias, the most beautiful species of the most ancient living lineage of the flowering plants.—W.L.C.

This article and its illustrations were taken from HOME TO THE SOUTHERN MAGNOLIA, an article in FLORA, the news publication of the Sarah P. Duke Gardens, adjoining the Duke University campus, Durham, NC.

THE OTHER SIDE OF THE MOUNTAIN

by Villa Zala



Compared to the Rockies or even the Smokies, Edwards Mountain on the northern edge of Chatham County is hardly a mountain at all. It slopes up timidly for the first third of the way, then vaults suddenly to its summit—a modest 366 feet. Still and all it has achieved nation-wide fame of a sort, probably the only

mountain of its size to be featured in full-color in the pages of *TIME* and other prestigious publications.

Also it may be the only mountain currently suffering from a case of schizophrenia. On its northern side it has long housed some 300-odd mobile homes in a terraced trailer park called Nature Trail, while it is also now getting ready to accommodate a well-heeled golfing community to be known as the Governors' Club.

This correspondent has spent fifteen happy years in a double-wide trailer at the top of Edwards Mountain and is hoping to remain here until the last trumpet blows. The mountain has been here a great deal longer than any of us and probably remembers Indians. I personally can remember the den of foxes we had in the gravel-quarry, the white deer I encountered down near the entrance, and the Little Bambi creature I just avoided running over. I have seen the Jordan Lake eagles soaring overhead and in the fall heard the gunshots of hunters out back in the woods.

Next door, on the other side of the mountain, the bulldozers are doing what bulldozers do. The newspapers tell me that special care will be taken with the salamander pond, said to be the only place on this planet that this particular kind of salamander breeds. I have never seen the pond, but the salamanders themselves, when fully grown, make their way over the top of the mountain and I find them basking on the steps that lead to my deck. I get a definite impression that, like the other creatures around, they think they own the place. And, of course, they are absolutely right.

Other owners of the place include the irresistible toad pretending with such confidence to be just another clod of earth, the possum who goes right on sniffing the leaves while I do tai chi exercises above him on the deck, the squirrel who for three years has been flaunting his tail at my cat as he escapes her once again—and, of course, the occasional snake. There are also the chiggers, the ticks, and the mosquitoes but they are merely summer visitors.

Also waving deeds of possession are the various tribes of trees. Two of them especially, standing on either side of my trailer and touching hands overhead, are known as the Sentinels. They are tall, mature beeches and when the roots of one of them had to be disturbed to accommodate a 24-foot wider, I got a skilled tree-man from the Botanical Garden to come and thin out branches to help it survive. The reason they are called the Sentinels is that the cat and I are both a little scary of thunder storms, and we hope Rutherford Platt was right when

he wrote "the oil within a beech is struck by lightning far less often than other trees." Which means we're "fully covered," not once but twice.



Edwards Mountain, so far as we know, has no supply of gold or precious metals, but it is incredibly rich in something much more useful. The pumping equipment down near the creek (where the swamp willows grow) commands such a vast supply of underground water that it is piped, I have been told, all the way to Wake County! That fact alone should establish Edwards Mountain as Little Big-Mountain. It is sitting on top of a natural resource.

We have never, so far, had a restriction on water-use, even in droughts. The water runs through meters, to be sure, but we are free to use all we can pay for. That permits gardens; and some of the long-time residents have achieved remarkable results with the use of species native to the Piedmont. My neighbor down the road has an entrance enhanced by long-leaf pines and pathways winding through mahonias, hollies, rhododendrons and azaleas. A buxom gardenia bush perfumes the area each June, and the asclepias overflow their garden-space and show up again amid the pebbles in the road.

And speaking of pebbles—my driveway is covered by pebbles to the depth perhaps of two inches. I have long-since learned not to rush out there and yank up the "weeds." Most of those weeds, left alone, develop into what my grandmother used to call volunteers. I have had so much black-eyed susan, so much green-and-gold, so much *Phlox divaricata* (not to mention violets) grow into healthy plants because their seed had fallen among the pebbles and been held fast there, that I now invite my neighbors to come over with trowels and take what they want. It is always such a good feeling when you help a new neighbor to set up a garden.

It is true there have been rumors that this side of the mountain might join the other side in the matter of ownership, and there was wide consternation. But it was answered by a letter from the management: "the rumor is untrue. The owners have no intention of selling the park to Governors' Club."

All of us now—the white deer, the possum, the cat and the squirrel, the wildflowers that are allowed to grow where the seeds fall, and this concerned correspondent, all say thank-you God in unison.

Villa Zala is a retired newspaper woman. She was, for many years, volunteer librarian at the North Carolina Botanical Garden. She is still active at the Garden as chairman of the Poisons Garden.



Westman

WILDFLOWER BUYERS, BEWARE!

In early 1985, a call was received from Dick Lighty, Director of Mt. Cuba Center for the Study of Piedmont Flora (Delaware), suggesting a meeting of gardens and other organizations with primary interest in the study, use and conservation of native plants. A common thread joining these organizations was promotional activity directed toward establishing a conservation ethic for horticultural use of native plants and particularly directed at the procurement of native plants for horticultural purposes. Our own Garden had already established its "Conservation through Propagation" program and the New England Wild Flower Society had conducted a nationwide survey of wild collecting of wildflowers by nurseries. In effect we were all trying to promote propagation of native plants as a responsible way to provide them for the gardening public. We were also aware that a number of our wildflowers, particularly orchids and trilliums because they are rare, difficult or impossible to propagate or simply difficult to cultivate, are inappropriate for general garden use. As our organizations strived to spread our conservation message to the gardening public, we realized a need that we be unified in communicating the same basic message. In response to this phone conversation, the N.C. Botanical Garden hosted the first gathering of some of the native plant organizations with these similar concerns. During late July, 1985, representatives of the Virginia Native Plant Society, The New England Wild Flower Society, The Center for Plant Conservation, the North Carolina Plant Conservation Program, The Brandywine Conservancy, Bowman's Hill Wildflower Preserve, and the Crosby Arboretum met at the Botanical Garden to begin discussions which have continued each year since and now include an association of more than fifty native plant related groups, all actively involved in promoting conservation of native plants and communicating strategies to gardeners and other interested people. This group has adopted the name, Eastern Native Plant Alliance (ENPA).

The Eastern Native Plant Alliance "Plant Alert," reprinted below, is a statement that resulted from the group's last gathering and indicates that more than ever, there is a need to communicate about exploitation of our wildflowers and to advise the gardening public to do business with nurseries that truly propagate the plants they sell and do not offer inappropriate wild-collected species.

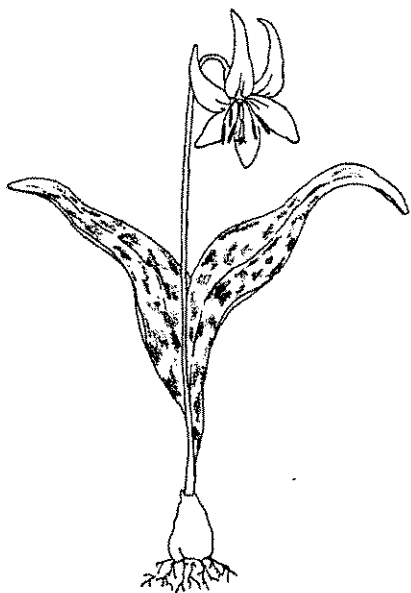
We hope you will use the information to make wiser purchases, advise your gardening friends and pick up pen and paper to add your own opinions in support of conservation.

Also remember that the Botanical Garden has available a useful list of Propagated Sources of Southeastern Native Plants which may be picked up at the Botanical Garden or will be mailed to you if requested with a stamped, self-addressed return envelope. We are continuing to update our listing of nurseries that propagate the plants they offer and appreciate new sources with which our members have experience. Thanks for supporting "Conservation through Propagation."

Ken Moore
Assistant Director
NC Botanical Garden

THE PIEDMONT'S TWO YELLOW TROUT—LILIES: HISTORY AND CURRENT RESEARCH

by Milo Pyne



This spring, as in all past years, we will witness the reproductive cycle of the yellow trout lily, or *Erythronium*. This common ephemeral spring wild flower is much appreciated by all observers of nature in the Piedmont, and throughout the Eastern United States. What is not generally appreciated, however, is the fact that we have not one, but two, species of yellow *Erythronium* in the Carolina Piedmont woods.

These two species are fairly easily distinguished in the field, and have been nomenclaturally recognized for twenty-five years. Despite this, even most well-informed wildflower enthusiasts are unaware of the existence of any species except the "common" trout-lily, *Erythronium americanum*. This is primarily because this is the only species recognized in the Manual of the

Vascular Flora of the Carolinas, published in 1968.

In 1963, Dr. James Hardin of North Carolina State University, and Dr. Clifford Parks of UNC-Chapel Hill, then a graduate student at NCSU, applied the name *Erythronium umbilicatum* to a group of morphologically and phenologically distinct trout-lilies of the Southeast. This earlier-flowering species has an indentation at the apical tip of the ovary where the style is attached, and the developing fruit is positioned on the ground surface by the bending of the peduncle. This is in contrast to the rounded ovary tip and horizontally-held fruit of the more widespread *E. americanum*. The two species also have slightly different petal shapes and chromosome numbers.

Even though *E. umbilicatum* is our more common species in the Piedmont of North Carolina, it went without a name until 1863, and passed as an un-named form of *E. americanum* prior to that date. It has been observed and noted, but not named, by Dr. Roland Harper in Alabama in the 1940's and 1950's.

This "umbilicate," or naveled, species is found from West Virginia south through Virginia, North Carolina and eastern Tennessee, into South Carolina, Georgia, and Alabama, and is called the Southern Trout-lily. The differences between it and the more widespread and predominantly northern species are easier to see in the field, with live material, than with dried material in the herbarium. In addition the diploid (2n) *E. umbilicatum* is one of the putative parents of a hybrid which has become the tetraploid (4n) *E. americanum*. The article describing the species, in the botanical journal *Brittonia* (Vol. 15, pp. 245-259, July

1963) more fully explains the life history and morphology of *E. umbilicatum*, as well as its participation in the hybrid origin of *E. americanum*.

In certain areas of the Eno River, most notably the lower portion near Willie Duke's Bluff north of Durham, the 2 species grow in close proximity to each other, apparently without any competition of hybridization. Current research by Dr. Alec Motten, a research scientist in the Duke University Botany Department, hopes to understand how two so closely related species are able to coexist so well with such similar ecological requirements, while remaining distinct with no apparent hybrid zones or introgression. Any hybrids between a diploid and a tetraploid would be sterile triploids ($3n$), so one would expect there to be factors to prevent this hybridization from occurring.

The research has ruled out incompatibility, difference in pollinators, or separation of habitats as factors, and is focusing on the time of bloom (flowering phenology) as a primary factor. Transects have been set up to study the flowering phenology as it relates to the overall life history, to make inferences about selection pressures on the populations. Along several transects, the number of flowering plants of each species is recorded as a function of the date, and since the transects follow a gradient perpendicular to the river, the data will give an idea of the occurrence of flowering for the 2 species in both space and time.

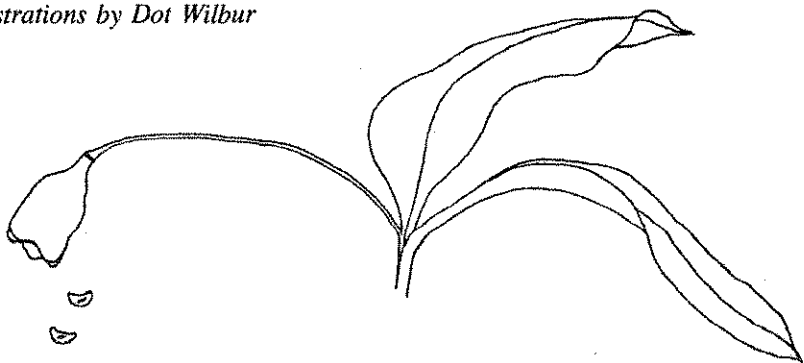
It has also been noted that while *E. umbilicatum* has a higher flowering density than *E. americanum*, *E. umbilicatum* can only reproduce sexually, and *E. americanum* is able to reproduce both clonally and sexually. Some plants have been found which are intermediate in flower size and other characters, and these will be grown in the greenhouse and subsequent chromosome counts will determine if they are triploid hybrids. If so, crosses will be attempted to see if they are sterile.

This story of the two yellow trout-lilies is a good example of the interesting tales that can be told about even a common and seemingly well-understood plant like the *Erythronium* of the Piedmont.

A previous version of this article appeared in the Spring 1988 issue of the NEWSLETTER OF THE ENO RIVER ASSOCIATION.

Milo Pyne is a graduate student at NC State. His special interest is the genus Liatris. He has promised to give us an article on this for the next issue.

Illustrations by Dot Wilbur



WHITE IS FOR A WOODLAND SPRING

by Martha Prince

9 Winding Way, Locust Valley, NY 11560

April enters as a magic month. The trees are leafless still, although the snow has gone. A casual walker in our Eastern woods, not looking down, would call them brown, or dull, or grey. Nature is hesitant to call attention to her first shy offering of woodland flowers, and most are tiny, white and secretive. You must search for them in hidden places.

If there is a white pine grove, or the edge of an old road cut (a predilection, for some strange reason) the trailing arbutus (*Epigaea repens*) will have its flowers tucked under oak leaves. There may not be an oak tree overhead, but I have yet to find arbutus blossoms without first pushing away an oakleaf blanket. The low, oval arbutus leaves are tough, evergreen and leathery, but the five-petaled blossoms are delicate and sweet. To catch the elusive fragrance, you must put your nose almost on the ground. Some arbutus is tinged with pink, blushing for having arrived too soon for spring.

Emily Dickinson wrote:

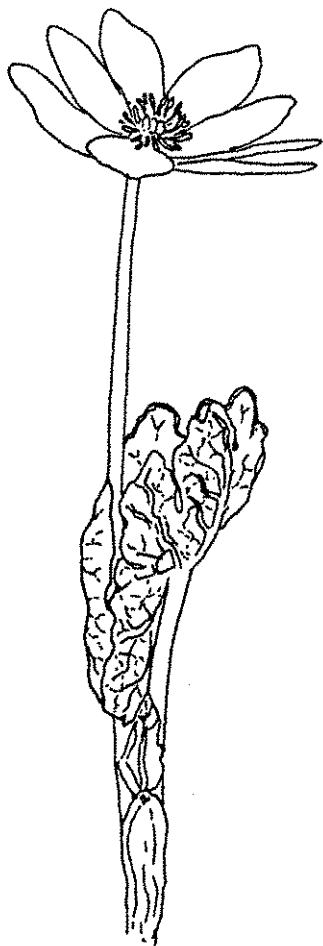
"Pink, small and punctual
Aromatic, low"

as the first lines for a poem she sent to someone with a sprig of arbutus. I think she used poetic license, at least a little bit. "Pink" and "punctual" sound special together, and "white" would not fit.

Arbutus can be somewhat difficult in a home woodland; it hates to be transplanted, and usually dies in frustration. Cuttings can be successful, but seed takes three years, at least, to flower.

Blooming with the arbutus is bloodroot (*Sanguinaria canadensis*). Although the open flowers are glisteningly white and pretty, the special time for bloodroot is when each lobed leaf still curls around its own white bud, protectingly. The underside of a leaf is a greyed green, and the veins stand out in a fascinatingly intricate pattern. Once open, bloodroot is not so unique. There is a handsome double-flowered form, but it is found in special nurseries, and you will never find it in the wild.

Shortia (*Shortia galacifolia*) is a treasure with a story behind it; it was discovered only to be "lost" for almost a hundred years. Andre Michaux, on one of his discovery tours, found the plant—in leaf only. His pressed herbarium specimen was noticed in Paris long years later by the great botanist, Asa Gray. Michaux



had written the cryptic notation on the specimen, "From the high mountains of Carolina," and the search for it centered on the mountain tops. Michaux meant "among," not "on." Professor Sargent finally found it in the late nineteenth century, by a stream in the northwest corner of South Carolina. If the previous searchers had only read Michaux's diary, the place is pinpointed! It grows wild in a tiny adjoining part of Georgia, too, and in parts of North Carolina. (Unhappily, a power company lake is filling a large portion of the original South Carolina habitat.)

Shortia's romantic history is not the reason to cherish it. A tiny plant, with five dainty scalloped petals, showy yellow anthers, pink bracts and a pink stem, it is one of the most delightful small things native to Eastern woodlands. The basal leaves are glossy, tough and evergreen. It blooms with the bloodroot and the arbutus, a trio of Nature's loveliest.

I have found rue anemone (*Anemonella thalictroides*) in bloom at the same time, but the bloom-time of this dainty plant lasts for weeks and weeks. It is at its most floriferous nearer the middle of the month. The clustered flowers (six or seven petals and too many stamens for me to count) grow on such fragile-looking stems it is hard to believe what a tough little plant this is. The leaves are thrice-compound, and resemble those of meadow rue. The "Anemonella" is because it is not too far removed in looks from the true anemone. As a matter of fact, *Anemone quinquefolia*, the white windflower (single flowers on a stem, rather than clusters) may be found in the same woodland.

Spring beauty (*Claytonia virginica*) joins the rue anemone when it is in full bloom. Nature sparingly uses a touch of pink here, too, as veining on the five white petals. The leaves are long and narrow, and the whole plant disappears for the year once the seeds are set. For our own "woods" we dug clumps at a roadside spot where cars parked on them. We parked on them ourselves! The flowers must have appreciated the rescue, for they come up faithfully year after year.

White violets bring a fragrance to the mid-April woods. There are two you may find: *Viola blanda*, the sweet white violet, has a touch of purple on the petal veins, but *Viola pallens* is pure white (and perfumed, too).

Foamflower (*Tiarella cordifolia*) is an end-of-April flower. Fluffy pyramids of small white blossoms stand erect above vaguely maple-like leaves. It is a member of the Saxifrage family, and one of the other members resembles it somewhat—bishop's cap (*Mitella diphylla*).

Twin-leaf (*Jeffersonia diphylla*—named for Thomas Jefferson, of course) is a not-often-seen little woodland herb. There are eight petals and strange two-parted leaves. Another name for it is rheumatism root!

By the end of April there is some color on the forest floor. However, instead of the mahogany-colored wake robin (*Trillium erectum*), the white woodland has the white version of the same species. It also has *Trillium grandiflorum*, which becomes pinkish with age. As with all trilliums, Nature's arithmetic is carefully in threes. There is another, smaller white trillium, the snow trillium (*Trillium nivale*) but it would not like the same acid soil.

The common ladyslipper (*Cypripedium acaule*) is usually "pink" (a peculiar one), but *C. acaule* can also be found in white. It is more rare, and more northern than southern, too. The other little white ladyslipper, *C. candidum*, is also

averse to the acidity of the soil.

The White Woodland I speak of can be almost anywhere; it is most naturally a mixed hardwood (oak, especially) forest, with some white pine. The arbutus and ladyslippers want the pine—the spring beauty wants more light. The acid soil is rich in humus and rather moist. It is an Eastern woodland, near the mountains, at least in its southern range. The blooming times given here are for New York; for Georgia make the dates about a month earlier. I know this forest well. I searched the woods for arbutus and spring beauties as a child in Georgia; now I am a New Yorker.

When April ends in the woodland, the leaves are a fresh green on the trees, and the special subtlety of all-white is over. Nature exchanges her most delicate art for a brighter palette of color.

This article was taken from the spring 1977 issue of the AMERICAN HORTICULTURIST, journal of the American Horticultural Society.

Illustration by Dot Wilbur

ATTENTION WOMEN WRITERS

**The Syvenna Foundation
writers' retreat for women invites
applications for its 3-month residency program.**

Located near Linden, in rural northeast Texas, the Syvenna Foundation operates four 3-month terms of residency per year. The program is designed for women of all ages who are at the beginning of their writing careers. All types of writing—academic, creative, or technical—are considered. Each successful applicant is provided with a private cottage and a stipend of \$300 per month.

For further information, write:

The Syvenna Foundation
Route 1, Box 193
Linden, Texas 75563
or call: 214/835-8252

**SUMMARY OF TRIP TO HAMMOCKS BEACH STATE PARK,
CAMP LEJEUNE, AND HADNOT CREEK NATURAL AREA
OCTOBER 7-8, 1989**
by Owen McConnell

The day broke mild and sunny as we departed from the ferry dock at 8:30 a.m. bound for Bear Island, an 870 acre barrier island about 3.5 miles long and one-half mile wide. After disembarking on the island, Jeannie Kraus of the N.C. Maritime Museum, who was one of our field trip leaders, called our attention to the pennywort (*Hydrocotyle bonariensis*) whose horizontal leaves (which will orient vertically in bright sunlight) covered the ground like small water lily pads. She informed us that the underground stem bases were edible and had a taste of parsley, the family to which this species belongs. On the walk across the island to the bathhouse near the beach, we enjoyed the bright yellow ribbons of golden asters (*Heterotheca subaxillaris*) which bordered our path but were concerned about the brown needles of some red cedars. Jeannie explained that salt-laden winds from Hurricane Hugo had only dehydrated and killed the new growth of outer needles, reassuring us that most would regenerate.

We assembled at the bathhouse to hear a well-integrated summary of coastal geology presented by Dr. Ernie Seneca, a coastal plain ecologist from NCSU. When we walked on the beach shortly after his talk, Ernie picked up a dark-colored oyster shell which he said grew in a sound located there when the ocean shore was farther eastward. As the transgressing sea moves landward, it is uncovering old lagoon deposits of shells between 7,000 and 9,000 years old.

Ernie and Jeannie teamed up to lead our group in an exploration of the vegetation from the frontal dunes near the shore to the salt marsh on the opposite side of the island. They described the identifying features of floral species and explained the ingenious adaptations they had evolved in order to tolerate salinity, wind and sand-blast, reflected heat and light, and nutrient-poor soil. The care they took to see that everyone understood and that all questions were answered was greatly appreciated.

Perennial grasses, such as sea oats and running beach grass (*Panicum amarum*), some with leaves which roll up to conserve water, dominated the frontal dunes. The only shrub we saw in these front-most dunes was seashore elder (*Iva imbricata*), a semi-woody plant with opposite leaves which is deciduous in cold areas. In swales behind the dunes, however, grew maritime shrub thickets comprised primarily of dwarf live oak, wax-myrtle, yaupon, *Baccharis*, and *Juniperus* entangled with lianas such as greenbrier, grape, Virginia creeper, and poison ivy. These copses with tops sheared by wind-borne spray were so dense that one might crawl over their smooth, compact tops but never through their impenetrable tangle.

Some attractive wildflowers bloomed in the more open spaces of the swales between shrub thickets: marsh pink (*Sabatia stellaris*), gerardia (*Agalinis linifolia*), and masses of *Muhlenbergia capillaris* whose loose panicles blended together to create a beautiful purple mist a foot above the ground.

From the swales we climbed a large migrating dune almost devoid of vegetation due to its shifting sands. From atop the far end of this high, mobile dune we could see that it was overriding the maritime forest and marsh below, drown-

ing them in waves of sand. At the edge of the maritime forest we observed Carolina laurel cherry (*Prunus caroliniana*), rattan (*Berchemia scandens*), and hackberry (*Celtis laevigata*).

After lunch we donned rubber boots, and Jeannie led us on a walk in the salt marsh. In the detritus of cord grass (*Spartina alterniflora*) were coffee bean snails, square-back crabs, and fiddler crabs, while periwinkle snails clung to cord grass stems above the high water mark, out of reach of the fishes and crabs that eat them. The periwinkles eat a fungus that grows on the grass rather than the grass itself. The edible glasswort, (*Salicornia virginica*, had turned from summer green to fall red and glowed now like a marsh ruby. Jeannie exclaimed with delight when she spied her favorite marsh flower hidden among the salt grasses—the diminutive sea lavender (*Limonium carolinianum*), displaying tiny purple flowers with red centers arranged in a fan-shaped inflorescence.

A business meeting was held Saturday night after a satisfying seafood buffet at Blackbeard's Galley. Sunday morning an all-night rain continued as our motorcade left the Islander Motor Inn on Emerald Isle bound for Camp Lejeune. Miraculously the rain ended just as we parked near the "Pristine Area": about 30 acres of old-growth longleaf pine savannah surrounded by pocosins and bays in the heart of the marine base. Julie Moore, who had previously conducted research on wetland plants of Camp Lejeune, gained our access to this area which is usually not open to the public. The marines acquired Camp Lejeune in the 1930's, and the Pristine Area has been little altered since then, except for a fire in the late 1970's followed by controlled burning every year since then to maintain the sub-climax longleaf pines. The natural barriers (pocosins) surrounding the area protected it until Julie persuaded a marine general, who has since died, to conserve it. Two marine officers who accompanied our party convinced us of their desire to continue to protect it and of their appreciation of the need for controlled burning to maintain it.

Julie commented on the fine condition of the wire grass, which is a good indicator of the health of the whole plant community. She also mentioned the curious growth habit of these longleaf pines, which become flat-topped in age, and noted the great diversity of ground level plants. Among the latter, she pointed out a pixie-moss (*Pyxidanthra barbulata*), the larger of the two North Carolina pixie mosses and the one that likes wetter habitats, and the blooming Vanilla plant (*Trilisa odoratissima*) with strongly fragrant leaves. Finding the pine barrens tree frog, a rare mushroom (*Tylopilus conicus*), and hearing Pam Robinson tell about her current research on the endangered red-cockaded woodpeckers of the area, added to my awareness of the importance of preserving this increasingly scarce type of ecosystem.

The trip ended with a memorable lunch and walk at Steve Warner's fascinating Hadnot Creek Farm and Natural Area on a knoll overlooking the brackish White Oak River. Steve served delicious roasted chestnuts and pears from his own trees and guided us around the area where we saw many interesting species including the ground nut (*Apios americana*), whose tubers the early settlers depended on for food, and the marsh elder (*Iva frutescens*) with opposite leaves which distinguish it from look-alike *Baccharis*.

The writing of this account of the weekend brought back in the form of memories

much of the pleasure of the outing. My thanks to Ernie, Jeannie, Julie, Steve, and everyone who contributed so much to the enjoyment of it.

Note: We are especially grateful to members, Owen and Pat McConnell, for taking the time to prepare this article when they have been so busy getting Pat ready to fly to Japan to welcome a new grandchild.

VANISHING GREEN

Guest Editorial

The future of our cities and the part horticulture must play in their preservation is a subject of great import to all people today. Because of the timeliness of Dr. Gates' words, your Editorial Committee is pleased to include here the following editorial from the Missouri Botanical Garden Bulletin, Vol. 58, No. 1, 1970.

Most people are alarmed about the vanishing wilderness. I am of course concerned about our natural areas, but I am concerned also with our vanishing urban parks and greenbelts. St. Louis is a fortunate city with its many tree lined streets and beautiful parks. Not all cities are so green, and St. Louis is cooler because of the trees, and has more shade and less wind.

A healthy city is a green city. Plants filter the air and supply the oxygen we breathe. A city of only asphalt and pavement, of sewers and skyscrapers, of freeways and parking lots is a sick city. Many must learn to merge country and city and to integrate greenbelts with residence and business. European cities are tree lined and dotted with parks. By tradition the European understands the need for urban parks, for Tivoli, and for botanical gardens.

We need the right kinds of trees and shrubs for the city. Not all plants will grow in the summer heat reflected from parking lots and buildings. Not every tree will tolerate the masses of salt splashed from the streets in winter into the soil around their roots. Nor is it easy for plants to breathe the chemical laden urban air and remain healthy.

We need to plan the proper plants for the city and to cultivate them especially for this purpose. We need to integrate the country with the city and get some of nature back into the urban area. Birds and animals will live with us in the city if we give them the proper habitats, such as cover for quail in our parks, fruit trees for wax-wings in our yards, shrubs with seeds for cardinals, and insects for the warblers that migrate through in the spring and autumn.

David M. Gates, Director
Missouri Botanical Garden
St. Louis, Missouri 63110

(Courtesy of American Horticulturist)

SPECIAL VOLUNTEERS

by Benson Kirkman

Our Society has been blessed with many dedicated volunteers over the years. Many of them go unrecognized for their many contributions. With so many possibilities, I am hesitant to single anyone out, but I have chosen two as representative of the many who give so much. These two, Jean Stewart and Ray Noggle, symbolize the best of the Society, and are part of the reason I became an active participant.

Jean Stewart was President of the Society 1974-76 and has helped in nearly every task imaginable over the years. I have found her (and her husband, Pearson) to be an invaluable resource during my term on the Board of Directors and as President. Jean Stewart brings fun (and often a culinary delight) into the work and at every opportunity. She has been a mainstay at getting the *Newsletters* and other mailings out, willing to do almost any task. Jean even verifies the mailing list than Gretchen Cozart and Tom Howard maintain. As our membership grows, Jean needs help, however, and the MIS gives you a chance to help and join the fun by helping with the mailings.

Ray Noggle, President 1984-88, has handled the sales of the *North Carolina Native Plant Propagation Handbook* for several years. Our *Handbook* is one of the finest publications of its kind, but without someone to do the legwork, a much smaller number of people would have a chance to use it. Ray promotes the *Handbook*, handles the sales, and maintains the Publications account. I have also learned to rely on his advice and support in many other Society activities. He and his wife, Ruth, have quietly contributed uncounted services to the Society for many years.

NORTH CAROLINA WILD FLOWER PRESERVATION SOCIETY, INC. Aims & Objectives

The North Carolina Wild Flower Preservation Society was formed on April 29, 1951 by a group of individuals appreciative of native plants throughout the state and region. The purpose of the Society is to promote enjoyment and conservation of native plants and their habitats through education, protection, and propagation.

Spring and fall meetings are held at "natural gardens" across the state. They feature field trips led by knowledgeable plantmen and visits to native plant gardens and nurseries. Members also exchange seeds and propagated plants at these meetings. Other excursions are organized on a local basis throughout the year.

The Society Newsletter, first published in November 1952, is issued twice a year with articles and illustrations by professional and amateur contributors. The Newsletter includes articles on propagation and cultivation of native plants as well as Society activities.

The Society publishes the *N.C. Native Plant Propagation Handbook* that is available for sale at the Botanical Garden or by mail (\$5.00, postpaid).

The Society Scholarship/Grant Fund sponsors research on native plants by undergraduate and graduate students. The fund is supported by member contributions and by gifts and memorials. Applications are made to the Scholarship/Grant Fund Committee for awards in May of each year.

The Society operates through elected officers and trustees and through appointed committees. Members are urged to participate in the workings of the Society. Office space is provided by the North Carolina Botanical Garden in Chapel Hill.

The Society is a nonprofit organization under North Carolina and Internal Revenue Service regulations. Donations are tax deductible.

Correspondence concerning the Society and its programs should be addressed to: North Carolina Wild Flower Preservation Society, Inc., c/o North Carolina Botanical Garden, Totten Center 3375, UNC-CH, Chapel Hill, NC 27599-3375.

MEMBERSHIP APPLICATION

Individual Annual Dues: \$ 7.50
Family Annual Dues: 10.00
Sustaining Annual Dues: 25.00
Lifetime Membership: \$150.00

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