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JC Raulston Arboretum

Friends of the Arboretum Newsletter

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In January I was eating in a local restaurant when an acquaintance introduced my to a "Friend of the NCSU Arboretum (now the JC Raulston Arboretum)" who I had never met. We exchanged introductory comments and she stated how much she thoroughly enjoyed reading the newsletter and then asked if I could guess what her favorite part of the newsletter was. Failing in a couple of guesses I gave up and she explained it was "your imaginative and varied list of numerous excuses why the newsletter is always late". Well, I guess something for everyone is our policy! With an interval of nine months since our last issue and five months past the time I had hoped to get this issue out -- I feel I could do an entire newsletter on my excuses alone. But I shall spare you that as there are too many other good things to focus on. (Well -- just one for my faithful reader -- the latest frustration has been a computer memory typewriter which has the entire issue stored and refuses to regurgitate it == for two weeks it sits and shreds printing keys and spits them out at Judy to the total puzzlement of the repairman who can't seem to correct the problem). Enough.

Announcements and Coming Events

April 22 (Monday) - Two Slide Shows by Special Guest Lecturer - Mr. Paul Meyer of the Morris Arboretum. Mr. Meyer is curator of the Morris Arboretum in Philadelphia and one of the most noted Asian plant collectors in America today. He has been on a variety of expeditions to Taiwan, Japan, China, and Korea and will share his experiences with us. At noon and 8 p.m. he will present a seminar to the Horticultural Science Department (open to all) in Room 159, Kilgore Hall on "The People, Crops and Agriculture of Mainland China". That evening at 8:00 p.m. in the same room, he will lecture for the Friends of the NCSU Arboretum (now the JC Raulston Arboretum) on his experiences in plant collecting throughout Asia. Don't miss this most special event!

May 1 (Wednesday) - Curators Night. At 8:00 p.m. in Room 159 of Kilgore Hall our team of excellent plant curators will discuss the gardens and plants under their care: M. K. Ramm - the lath house; Edith Eddleman - the perennial border; Larry Hatch - the rock garden (and rumor has it that a topic of variegated plants will also infiltrate his presentation); and Suzanne Edney -the groundcovers area. We'll also have a plant drawing and distribution of goodies during the evening.

May 14 (Tuesday) - Friends of the NCSU Arboretum (now the JC Raulston Arboretum) Slide Show. At 8:00 p.m. in Room 159 of Kilgore Hall I'll do a slide presentation on a look at the past, present and future of the arboretum and discuss some of the interesting plants in the collection. We'll have a display of some of our newer acquisitions and once again have a plant swap - if you're digging and dividing plants and have extras, bring them to trade or give away.

June 26 (Wednesday) - Friends of the NCSU Arboretum (now the JC Raulston Arboretum) Slide Show. At 8:00 p.m. in Room 159 of Kilgore Hall I'll have a slide presentation on the gardens seen in Ireland, Wales, and England during my late May - early June trip.

June the Somethingeenth - Next Newsletter and Membership Renewals. Many have been concerned that their membership may have expired. Renewal notices will be sent with the next mailing so please do not send money for that purpose until requested. (It will give me a better incentive to get the newsletter out on time!) Full report of plant winter damage in next issue.

Weekend Garden Tours - Beginning on April 20-21 and each Saturday and Sunday thereafter at 2:00 p.m. guided tours of the arboretum will be conducted by a group of Master Gardener volunteers. Tours will begin at the Visitor Center -- encourage your friends and neighbors to enjoy this new service of the garden.

Arboretum Happenings

Many changes and events have occurred in the life of the NCSU Arboretum (now the JC Raulston Arboretum) over the past nine months. The bad news includes my secretary Emily Tate leaving for a better position in the NCSU graduate school offices after spending nine years in the Horticulture Department. She was a grand secretary and we wish her all the best in the new job. The good news is the addition of Judy Johnson as a replacement. We're all delighted with her excellent work and cheerful handling of all the many details swirling around arboretum activities -- from memberships, to purchasing details to correspondence and the newsletter. Another important addition has been that of Suzanne Edney, who is now handling the hedges/groundcovers/paving materials courtyard. Her rearrangement and replanting of that area is already showing significant improvement in the displays. Suzanne has profesional garden design business in the Raleigh/Cary area.

Through the assistance of Erv Evans of the Wake County Extension Service, a group of experienced master Gardeners have agreed to conduct both specifically booked group tours (garden clubs, school groups, etc.) and public tours each Saturday and Sunday at 2:00 p.m. The group presently consists of Laura Arnold, Tony Avent, April Blazich, Wayne Brooke, Teresa Cyr, Jim Eads, Suzanne Edney, Fay Schweikert, Jenell Dougherty and Earl Tarr. We greatly appreciate the efforts of all these people to make the arboretum more accessible and useful to a wider range of visitors.

I suppose I should also introduce a new helper by the name of Lisa, who joined us in November. Though she has great abilities and is going to be an invaluable resource for us -- to this point she and I are not very well acquainted and I'm very reluctant about our relationship. But everyone tells me the Apple Lisa is the easiest computer system to use and the hard disk 10-megabyte capacity will allow any possible record handling we need -- so I need to get over my computer phobia and start using the system. So far I've found the new computer desk a great place to sort slides and pile papers on -- probably not the most effective use of that area.

Then there was the little matter of the night of January 20-21 -- coldest night in North Carolina's history. We recorded -6oF at the arboretum, -9oF at the Raleigh airport which broke the previous all-time low record of -2oF set on February 14, 1899. Of course, some plant damage resulted but surprisingly less than expected. A full report will follow in the next newsletter but our major losses were all the old Camellias which screened the entrance of the garden from the parking lot, the old Cleyeras in the Japanese Garden, and evergreen privets. Other than those two nights, the winter of 1984-85 will go on record as a mild one with much above-normal temperatures.

In the Japanese Garden, progress continues as we work to add plants and complete structures. In the fall, a number of nandinas and Japanese hollies were moved into the Zen garden by Ted Bilderback's nursery class and we have since added several dwarf Hinoki cypress. Though small (5-7'), the several Ader palmatum plants planted last spring had brilliant fall color and indicate the beautiful displays to be seen in coming years. Osakazuki is planted where it will be backlighted when seen from the deck and it glows a fiery orange-red. Will Hooker and Doug Bethune solved the difficult design problem of how to construct an appropriate cap for the wall surrounding the Zen garden and they installed it during February. In March, Mr. Archie Beal of Trees Unlimited once again graciously donated his time and use of his Big John transplanter to move five more of the dwarf loblolly pines around the perimeter of the garden as we continue to try to block the distracting views which we had in a 360o when began working on the site three years ago. Three foot tall Crytomeria japonica 'Benjamin Franklin' plants were interplanted with the pines west of the wall and in five years should begin to complete the screening of the industrial panorama once seen from the viewing deck. Between dodging two water lines that ran under the area, and the "discovery" (as Archie snapped a blade on the spade) of a shallow impermeable rock layer where we were trying to plant, installation of the pines became a tricky business. Bryce Lane's class then hand dug six specimen Japanese hollies and two multitrunk Myrica cerifera trees to continue the view plugging at the south side of the garden, creating an already attractive cove that has great potential as another quiet sitting contemplation corner. A major "invisible" job which required many hours of labor for no apparent change to the casual observer was the digging of the drifts of Gumpo azaleas, hauling out the soil, preparing a new planting medium of mostly bark with some sand and peat moss, and replanting the azaleas in their original position. The soil originally hauled in for the Japanese garden base consists of very fine sand dredgings from a farm pond at Clayton, North Carolina. Though a delight to dig in with a spade after the heavy clay everywhere else on the farm, it is very poorly aerated and the many azaleas donated by Bill an Libby Wilder of Wilder's Nursery were beginning to decline and many would likely have died this coming summer. Most of the plants are now in the Zen Garden and our next task is locating an appropriate gravel (which has become a major problem to find the exact color and size grade needed) and hauling it in to create the "sea". A major setback is the January freeze loss of the two magnificent 25 year-old specimen Ternstroemia gymnanthera plants which had been moved in by tree space two years ago. With the space they occupy now ringed by other plantings we can no longer move such large material to those areas.

Plants in the NCSU Arboretum (now the JC Raulston Arboretum) - Nandina Domestica - 'Heavenly Bamboo'

When I was growing up, learning plants and gardening techniques in the plains of north-central Oklahoma in the 1950's, few broadleaved evergreens were available commercially or seen in landscaping in that mostly wheat-farming region. The combination of high summer temperatures, cold winters with intense sunlight, drought, high winds and great sudden temperature shifts -- all severely limited the

possibilities for "average" use of broadleaved evergreens without creating special habitats or careful placement of material. But nandinas seemed to me to be among the best of possible plants -- they had handsome foliage attractive year-round, abundant white flowers in early summer, bright orange-red berries lasting all winter, withstood sun or shade, had no pests, and seemed to defy all odds and live forever. Three decades later and fifteen hundred miles to the east, I still feel they are among the finest of plants.

Since they are so easily grown, so easy to propagate and so tough; in the commercial landscape/nursery industry in North Carolina they were widely, and ultimately over-used to the point that they fell from favor in the 60's and 70's as being "too common" or "good" landscapes. Nurserymen almost stopped growing them and at present we are beginning to see them on an upswing again as a new generation rediscovers the positive features of this fine plant.

Nandina domestica is a member of the Berberidaceae (Barberry) family native from India to China, later introduced to Japan, and into Europe. The Japanese called it 'Nanten', which gave the genus its name. Only one species exists within the genus but, typical of many woody plants, there is a wide range of genetic variation among individual plants within the species. The straight species Nandina is grown from seed by growers and in walking through several thousand seedling plants in a field one can see differences in growth rate, height, rate o lateral clump spread, internode length, diameter of foliage spread on a stem, "looseness or openness" of individual compound leaves as well as overall size, summer and winter color of foliage, shape and size of fruit panicles, size and color of fruit as well as time of fruit color change in fall. The potential for selecting cultivar plants from all this variation is enormous if one desired plants for specific growth and fruiting characteristics. (Indeed, one trembles with fear of the possibility of a Nandina Society of America appearing, dozens of hobbyists suddenly discovering that they too can name a plant after their pet cat, and 200 new named cultivars per year begin to enter the ornamentals world. However, on the other hand -- it could also create new jobs as taxonomists develop to straighten out the nomenclature mess; herbaria paper and cabinet manufacturers could sell extra materials to accommodate reference collections; and arboreta could add new memorial collections. Perhaps creation of a Nandina Society could be a stimulus to the economic boom currently sought by government in America. But, I believe I have digressed.)

Only two "cultivars" of nandina are commonly seen in the North Carolina industry at present. The two dwarf forms -- 'atropurpurea nana' (also listed in catalogs as nana purpurea, nana, pygmaea, compacta and probably other terms) and 'Harbor Dwarf' are fairly well-known. 'Harbor Dwarf' has become a "hot" item in North Carolina in the last two years as landscape architects and contractors have discovered its virtue as a low-growing, tough, broad-leaved evergreen groundcover. Supplies are short and sell out quickly. An excellent west-coast cultivar, 'Wood's Dwarf', is being grown by a very few growers and has potential for increased popularity here, and the white-berried form is occasionally seen.

The United States west coast nursery/landscape industry is far more cultivar-oriented than the southeast and a number of cultivars have been -- and still are being -- introduced there to commercial trade. Most remain totally unknown in the east. Also -- as one would certainly expect -- the Japanese with their lover for unusual and extreme plant variations have made many selections of this plant used so widely in their country. During the past six years, 20 cultivars from all these sources have been added to the NCSU Arboretum (now the JC Raulston Arboretum) collection making it the most comprehensive collection of nandina in the United States in one place. Though our plants are young and have not yet attained their full size and character, a listing and noting of general plant characteristics may be of interest to various or keying-out purposes -- but will indicate some gross differences noted in my casual observation. Leaflet blade size varies considerably and in some extreme cases becomes so reduced that only the midribs remain -- looking like some insect has defoliated the plant. I've tried to give an approximate relative proportion of leaflet blade to midribs that one "sees" when looking down on a plant. The "typical" species nandina one sees in the landscape I would rate about 90-95% blade (and therefore 5-10% midrib).

Nandina Domestica Cultivars in NCSU Arboretum (now the JC Raulston Arboretum) - January 1985

Standard Size, Species-Like Nandina Cultivars (likely 4' + at 5 years age)

'Alba', 'White-Berries', or 'Yellow-Berried' -- the oldest of listed variants in literature. The berries are creamy-white to creamy-yellow and in a seed-produced population (comes relatively true from seed) will vary a bit in color. The foliage carries either less green or more yellow pigment also and has a more yellowish-green color than the species. The fruit shows up clearly against the foliage and shines brightly in sunlight. But berries also sun scorch and blacken in intense sun with freezing conditions so fruit display will remain longer and better colored when light shade. 90-95% blade. Our plant 5'T x 5'W.

'Aurea' - our plant small (1`) and recently obtained from California. Does indeed have bright yellow-golden foliage but likely the same plant as 'Alba'. 90-95% blade.

'Compacta' - a shorter plant (4-5' and foliage a bit lighter in density with a more lacy appearance than the species. Unfortunately this clone is now mixed in the trade as a major west-coast nursery has begun producing it from seed to meet demand instead of vegetatively producing the original true clone. I saw a bed of true cutting-grown 'compacta' (which had uniform red fall foliage color, size and growth) next to a bed of the seed-grown 'compacta' and they were markedly different. Our plant new - 6" tall. 80-85% B.

"Umpqua" Cultivars - Selected on the west coast and named for an Indian tribe of the Pacific Northwest. In general most observers have a difficult time noting any significant differences between these and the species -- other than uniformity of plant character is used in large planting blocs.

'Umpqua Princess' - smallest of the three cultivars which obtained three years ago -- nothing yet noted here as being particularly distinctive from the species. 90-95% B, 2 1/2'T x 2'W.

'Umpqua Chief' - mid-size, again nothing distinctive. 90-9% B,

'Umpqua Warrior' - Largest of the three cultivars and has the largest panicles of fruit -- both foliage and fruit panicle are more open and loose in nature. 80-90% B, 4'T x 3'W.

'Moyer's Red' - An excellent cultivar with several distinctive characteristics making i worthy of consideration for greater commercial use. It produces the greatest amount of anthocyanin pigment of all our cultivars which shows up in flowers, fruit and foliage. The flowers open distinctly pink -- the only cultivar that shows such flower coloration with us (and would vary with climate; cooler climates = darker color; warmer ones = lighter). The foliage is very dark green summer and winter - more purple-black green in winter without the red color of some others. The fruit is borne in tightly compact panicles and begins to turn color 1-2 months earlier than other berried forms. 85-90% B, 2'T x 1 1/2' W.

Mid-Range Cultivars (likely 1-3' in height at 5 years age)

'Atropururea nana' -- a dense, much branched from growing about 2' in height and diameter with time. I've been told it was originally introduced from Hilier's Nursery in England. It was the first widespread commercial cultivar in North Carolina. It varies rather widely in industry from source to source in the amount of leaf cupping and curling, streaking in foliage, winter pigmentation and vigor. Some feel the differences are due to varying amounts and kinds of virus present in stock. But there are definite variations in quality of plants. Clumps increase in diameter slowly and do not spread by underground shoots; the leaf is much smaller in area than the species, denser and curled or cupped; the foliage turns yellow orange, red, and/or purple in winter -- in better forms it is clear red; it does not flower or produce fruit. Densest foliage appearance of all cultivars in our collection. Near 100% B, 1 1/2' T x 1 1/22W.

'Okame' - A Japanese cultivar new to us this year. Characteristics are very similar to 'atropurpurea nana' -- as though it were a near virus free-form with vigorous growth, uniform undistorted foliage. It has the best red foliage of all our plants -- clear, uniform bright color very early in season. 95-100% B, 15"T x 15"W.

'Wood's Dwarf' or 'Wood's Red' - Another form with similar characteristics of 'atropurpurea nana' -- but foliage is larger and flatter, with less distortion -- excellent intense red winter color. Best of the available commercially-produced red-foliaged smaller cultivars. 95-100% B, 1'T x 15"W.

'Harbor Dwarf' - The above three cultivar have foliage rather different in appearance than the species. 'Harbor Dwarf' has the same flattened plane and the wide spread of species foliage (not turning red) on a compact plant to 2' in height, it also produces flowers and fruit, and spreads by underground runners - which makes it more useful commercially as a true groundcover plant which can fill into make solid beds. Rate of spread depend on softness and aeration of soil. With a mulched bed surface interface it will spread much more rapidly than if planted directly in our unmulched tight clay soil. Originally selected by Fed Galle of Callaway Gardens and named Callaway, but picked up by a west coast nursery and renamed to it's present commercially accepted name. An excellent plant. 95-100% B, 1 1/2'T x 2 1/2' W.

'Pygea', also listed as 'Minima' - a fairly tight bun-like mass of growth reaching 1-1 1/2'. Species-like foliage but reduced in size. I'm told it often produces a "reversion" vigorous shoot after potting from propagation, but if these are pruned out the plant is stable in maintaining its very compact growth. Our plant new and only 3" tall. 85-90% B (Sunset Western Garden Book says to 3' with bright red winter foliage).

'Royal Princess' - A recent addition obtained from a Seattle garden center. The individual leaflets are narrower and reduced from species foliage giving a lighter, more lacy effect. Our plant is too small and young to predict growth potential and rate -- might become standard-sized. I was told it originated at KM Nursery in California but is no longer being propagated commercially there. 70-80% B, 6"T x 1'W. Have never seen this name published elsewhere so it may be a local nursery applied one and not valid.

'San Gabriel' - A new cultivar recently publicized in Sunset Magazine and being sold at garden centers in California. Very much like our 'Royal Princess' but leaflets are even more reduced and elongated (1/16-1/8"W x 1-1 1/2"L) though still of species size and arrangement. Very light and lacy and has been a well-liked and popular plant in the arboretum with those that have seen it. No other known on flowering and fruiting, but form the appearance I would predict it probably will with time. I was told in California it originated in Japan under the name 'Kurijusi'. 15-25% B, 1'T x 1'W.

Swarf Cultivars (likely 2"-12" height at 5 years)

'Senbazuri' - Somewhat "normal" leaf in arrangement and angle, reduced in size, but the leaflet blades are completely gone and only midrib structure is left. Most "normal" in growth of our dwarf cultivars - appears to be a Harbor Dwarf with all the leaflets blade tissue removed. 5" B, 8"T x 8" W.

'Tama-Hime' - Like the above but more compact and slower to increase in height -- a bit more leaf blade tissue. 5" B, 3"T x 8"W.

'Ikada' - Again leaves have some size and are in the flattened planes of species nandina but slow in vertical stem growth. A bit more blade tissue than 'Tama-Hime'. A unique distinctive characteristic of this cultivar is the leaf midrib itself is often flattened to 1/8-3/8" in width. 10% B, 3"T x 1'W.

'Tsukmo' - Produces many branches and densely covered with leaves. The individual leaves have very little blade tissue but because there are so many, the plant has more "substance and visibility" than most of the dwarf forms. 5% B, 5" x 8"W.

'Shirochirimen' - Looks very much like 'Tsukmo' except has more blade tissue. 10% B, 2"T x 4"W.

'Tamazuru' - Much like the two above except not so many leaves or densely branched. 5-10% B, 2"W x 4"T.

Other listed cultivars not presently in our collections

'Stribling Little Princess' - Dense, tight clumps 3-4' tall; very slow growing, slow to spread. (Sunset Western Garden Book).

'Fire Power' - A new New Zealand cultivar. Apparently from the photographs, a virus-free form of' atropurpurea nana' of high quality. Being imported to the west coast in large quantity through the firm of New Zealand Nurseries Ltd., Post Office Box 1887, Bellingham, WA 98227 (wholesale only; 1,000 plant minimum order). We have it coming for our collection.

The book, Variegated Plants (1978 - Seibundo Shinkosha Pub. Co. Ltd.) by Masato Yokoi and Yoshimichi Hirose, has color photographs of both golden and silver variegated forms of Nandina. The test is in Japanese and I don't know what names have been assigned these plants. Have never seen either in any collection.

In the Brookside Gardens (Wheaten, Maryland) collections of Japanese plant cultivars gathered by Barry Yinger several years ago are several extremely atypical cultivars with twisted and curled leaf midribs, dwarfs, etc. These remain on my lusted-after and coveted plants list to hopefully someday acquire propagules from. The ones we do not have include; Orizuru, Shina Nanten, Fuiri Ikada, Shiro Ikada, Soga ikada and Aobo.

Nandina cultivars are all propagated by stem cuttings which root slowly (1-2 months) but in generally good (70-90%) percentages when taken at most any time of year (except when in the strong spring growth flush). Multiple cuttings can be made from individual stems as long as each has some foliage to support rooting. A hormone treatment is recommended. The major propagation problem with standard species-size cultivars is the large area of propagation space occupied by the 1-2' diameter of foliage spread on a single cutting. leaves can be trimmed to reduce propagation space requirements. Handle as one would any broadleafed evergreen cutting in regard to media, mist, light, bottom heat, etc. Clumps can also be divided and in the case of rapid spreading cultivars like 'Harbor Dwarf', this is a commercially feasible method.

Unfortunately, with the exception of the four North Carolina grown cultivars mentioned at the beginning, I have never seen any of the others for sale on the east coast. They are found at random scattered through various garden centers in California, Oregon and Washington. The only mail order source I know for the dwarf Japanese cultivars is: Hortica Gardens, Post Office Box 308, Placerville, CA 95667, telephone number (916) 622-7089). Liners of several of the less common standard-size and mid-range cultivars are sold by Mitsch Nursery, Route 3, Box 400, Aurora, OR 97002, telephone number (503) 266-9652 (wholesale commercial customers only). In the NCSU Arboretum (now the JC Raulston Arboretum) the larger cultivars are on display in the first set of beds after leaving the White Garden (the Cupressus and Hamamelis bed), and the smaller cultivars are in the lath house near the exit to the Japanese Garden.

Plant Mapping Progress

In the last newsletter issue I indicated that we were in the process of mapping the arboretum and preparing an inventory. As predicted I do not have the information in our computer yet, but the mapping at least is nearly complete. The following page illustrates what the format of our final plant locator book will be like. An index will list all plants that are planted in the arboretum with a page number showing which bed it is in and the location within that bed. The entire book is going to be ca. 250 pages - so it is taking a considerable amount of time to prepare. Hopefully ready in May (?) - doubtful - at least we get closer and closer to a useful locator technique. I am determined that one day a visitor will be able to stop in the Visitor Center and see a complete list of the collection and locate where a specific plant is planted - something I have yet to see in my travels anywhere in the world. Map

Notes from the Perennial Border - Edith Eddleman

Since its inception on the drawing board in 1982, the perennial border has been in a constant state of evolution. The past year has proved to be no exception. After the December 1983 blooms of Armeria plantaginea, the devastation of that year's Christmas Eve freeze had to be faced. Plants which normally would have survived such adverse conditions were killed, after having been stored in a cooler for one month and then encouraged into growth by the mild November and early December temperatures. Early May witnessed the frantic replacement of these plant casualties, the laying of the three long-anticipated stone pathways, the mammouth task of mulching the 18' x 300' border, and the addition of beautiful bulbous lilies from Dr. De Hertogh's research program. Whew! All was finished just in time for the visit of the American Rock Garden Society.

The first blossoms of 1984 were in march, the purple flowers of Verbena canadensis. These were followed rapidly by the deep, velvety-purple blooms of Viola X 'Blue Elf'. These two plants must hold the mid-south, Zone 8 record for continuing outdoor flowering, blooming from march 1984 through January 1985. The recent 9 F. degree temperatures checked their long run, but by March of this year both were flowering once again. Other March blooms in the border along to Euphorbia myrsinities; a white and yellow cultivar of Iris pumila, Potentilla villosa, Aurinia saxatilis, Anemone pulsatilla, Chrysogonum virgianum, Narcissus and 'Red Emperor' tulip. The Armeria and Dianthus are budded, promising great things for the 1985 season.

Looking back on 1984, some of the most exciting new plants in the border proved to long-flowering as well. Among these is Verbena bonariensis, a tall (3'-5') green-stemmed perennial bearing many clusters of lavender flowers from June until frost. Its virtues include drought tolerance. Companion plants in the border are a fall-blooming, single-flowered, light pink Korean Chrysanthemum and the silver-leaved, yellow-flowered yarrow, Achillea X 'Moonshine', flowering in May and June.

New to the border in 1984 were the loosestrifes (Lythrum virgatum) 'Morden Pink', 'Dropmore Purple' and the rose-red 'Robert'. Spikes of flowers were produced from June to September. The blue and white balloon flowers Platycodon grandiflorus, Phlox carolina 'Miss Longard' and yellow daylilies compliment the flowers of the Lythrum.

Echinacea purpurea 'White Lustre's' white relfex-petals combined with orange-tipped black "cones" are beautiful with the loose wands of Salvia azurea 'Grandiflora' in the fall and with Lythrum, Platycodon, and tall Phlox from July on. The purple coneflower, Echinacea purpurea, is, of course, the definitive plant to combine with Pink Plastic Flamingos, Eupatorium purpureum (Joe Pye weed), and the September flowering grass, Pennisetum setaceum.

Resembling a small hollyhock, Malva alcea var. fastigata bears multiple stems of light-pink flowers from June to September. It is exquisite planted with the silver foliage of Artemesia ludoviciana var. albula artemesioides. The Russian sage's fall-blooming, lavender-blue flower spikes atop soft silver, finely-cut foliage complete this grouping.

Notes from the Lath House - M. K. Ramm

Spring has definitely arrived in the lath house. The record cold of this winter caused less damage than the more normal temperatures of previous winters. This was because we had almost two inches of snow to keep roots and short plants close to 32oF when the lowest temperatures occurred and because plants we had trouble with last year were covered with pine needles this year. Consequently, the collection of Hebe, all of the Ligularia spp., the ender ferns, the Aspidistra and even many of the gerberas survived nicely.

Many plants are blooming now. These include Bergenia cordifolia, Carex morrowii 'Variegata', Rhododendron chapmanii X mucronulatum, Hepatica nobilis var. japonica, mixed hybrid Primroses, Corylopsis sinensis, Corylopsis pauciflora, purple Aubrieta, Potentilla alba, Erica terminalis, Luzula sylvatica, a double blue Vinca minor, Draba, Pieris 'Karenowa', Thlaspi blubosum, Arabis procumbens, Heloniopsis orientalis var. breviscape, Helleborus niger, Claytonia virginiana, Erythronium ameicanum, Hepatica americana, Phlox nivalis in assorted colors, Polygala chamaebuxus, Waldsteinia parviflora, Narcissus scaberulus, Galanthus nivalis 'Sam Arnott', Anemone nemerosa 'Lychette', Dicentra eximia 'Snowdrift', Dicentra oregana, Jeffersonia dubia, Rhododendron 'Mary Fleming', Potentilla cinerea, Fritillaria persica, Waldsteinia ternata, Pieris floribunda, Sanguinaria canadensis, Pieris phillyreifolia, Mertensia virginica, Dicentra eximia, Daphne cneorum 'Ruby Glow', Fothergilla gardenii, Rhododendron 'Donna Totten', Phlox 'Millstream Jupiter', Andromeda polifolia, Staphlea colchica and Rhododendron fastigatum.

While all of these are not really creating a sensational display (this would be asking a lot of one of something three inches tall), they are all interesting and not plants you will find in everyone's garden. A stroll through the lath house should be both interesting and educational at any time for the rest of the year. You will be certain to find plants you have never seen before and I'll be glad to tell you where you can get them if they are available commercially. Around the first of May, the Rhododendron hybrids will be putting on a spectacular show and those who like them or who think they can't be grown well in this area should be sure to visit the arboretum then.

Notes from the Rock Garden by Larry Hatch

The Arboretum rock garden was started nearly one year ago as a subsection of the existing ground cover collection area. As usual, the objective was to fit as many interesting and exciting new plants into the smallest space possible. We were especially interested in growing some fine species from the lathhouse that appeared to tolerate more sun and might have potential in more exposed conditions. A portion of the garden would also be et aside for evaluating hardy succulents for use as drought tolerant ground covers and accent plants.

Construction got underway in the summer of 1984. A number of interesting stone colors/textures were selected from the rock yard down Beryl Road for use as paving stone and the rock garden. One sunny day all three and a half tons arrived. The rocks were arranged to form miniature "alps" or horizontal rock, sandy loam, and pine bark. Each of the alps received its own specific ratio of soil components based on the general requirements of certain plant groups. More subtle differences in species' preferences within each unit would be accommodated by small soil pockets hollowed out and refilled at the time of planting.

The first unit to be completed was the hardy succulent site that is closet to the parterre garden. We received a wonderful donation of unusual Sedum from Alpine Gardens (now Red's Rhodies and Alpine Gardens) for evaluation of taxa in the Southeast. At planting time they were heavily rooted and colorful from a season in the greenhouse. One species, Sedum confusum was 10" tall by 15" wide with hundreds of wandering shoots, giving every warning that it wanted to take over the world by the end of the week. Later on I brought in an assortment of 40 or so Sempervivem (hens and chicks), and Joyibarba from my collection in Syracuse, NY to represent the full color and form potential of each genus. Species and cultivars that have performed well in hot climates (like Texas) were emphasized. since then a variety of Orostachvs, Opuntia, and Delosperma species have been added for more variety in texture and flower color. The whole collection has gotten off to a fine start with many of the plants holding red foliar pigmentation far longer than I've experienced up North. However several of the Sedum native to the Western U.S. dropped some leaves and appear to be only dormant - I hope! Some of the uncommon species are less vigorous and may offer an alternative to popular invasive species. Several are particularly desirable for their silver-grey leaves that aid color contrast with green-leaved succulents. Many of the Semps (Sempervivum) placed at the base of the hill

(in existing soil) rotted out early due to the accumulation of excess bark washed out from the media. Once the excess bark was removed, replacement plants showed no signs of damage. Many of these succulents can rot overnight when moist bark fragments settle in the rosette centers. But overall the Semps have doubled (or even tripled) in diameter this year and have superior color this spring. I am hoping we can eventually get some of the spectacular 12 inch wide rosettes that 'Packardian' and S. tectorum 'Super Giant' get after 4-5 years of colonization.

Later on in the summer a second site was constructed using a more loamy medium than was appropriate for the succulents. Since the Lathhouse collection contains a large number of species suitable for rock garden culture, there was no problem in getting 50 or more suitable candidates for trial. Some that did not do well in the Lathhouse were moved as entire plants, but many clones were simply divided to provide comparisons of performance. Probably the most spectacular improvement occurred with the Penstemon which formed luxuriant dark green mounds of foliage. Two taxa even flowered within months after reestablishment. Overall the best success has been achieved with plants having foliage in sun/part shade and roots in the part shade/full shade. Some of the species started on the exposed top of the hill succumbed quickly from stress and had to be replaced. Others lost a portion of their shoot system but have largely recovered by this spring. Those with roots covered by rock and therefore shaded have had the best survival rate regardless of watering frequency. In the midst of summer, watering once or even twice a day may not be enough if the root system is exposed in a raised bed. Some species will tolerate exposed dry/hot conditions if their roots are kept cool and moderately moist. It is very critical to keep the soil from drying out the first month while roots are getting established. Once roots are established and foliage develops it is also important not to get excess water on the foliage mass. This is particularly important with dense foliage plants like Dianthus (pinks) and Thymus (thymes) which can be rotted out in one day if water held in the foliage mass cannot evaporate rapidly. Within a dense, poorly ventilated foliage mass various types of fungal disease can multiply rapidly, causing permanent damage to both root and shoot tissues.

The second unit has been temporarily extended into the area shaded by the white pine hedge to provide shade for some species that seem to prefer uniform moisture conditions during the day. Two smaller "alps" were added between the hardy succulent hill and the second unit to form an N-shaped pathway between the four units. Some greenish-grey gravel was later added to provide a unifying texture surface between the units; much as a lawn does for a large garden. The gravel also cuts down on weeding, lessens watering, and tends to raise night temperatures of the soil by about 10 degrees F. because of the energy stored in the stone. One should use caution in placing gravel too close to the stems of young tender plants as the radiation of heat can burn unhardened tissues.

The most exciting arrival of new plants came from a large order placed with the Siskiyou Nursery. A fascinating assortment of rare species arrived one day and was emptied enthusiastically as i it were a chest full of gold. Among the exciting first performances was a small but showy bloom from the miniature Iberis sayana during this past January. This pygmy candytuft has now rebloomed again in March and seems more floriferous than dwarf cultivars of the popular Iberis sempervirens.

Later in the fall, the entire garden area was saturated to the last cubic inch with dwarf and small bulbs of all sizes and colors. Due to the generosity of M. K.. Ramm, Edith Edelman and Dr. Raulston some 72 different species and cultivars of choice bulbs were added. The first bulb to appear was the unusual fall-blooming Narcissus serotinus, a thin-leaved species with a Cosmos-like perianth and a very abbreviated central crown. The autumn-blooming Crocus and Colchicum also made a fine first year showing. It seems that Crocus speciosus and its cultivars 'Albus', 'Cassiope' and 'Conquerer' are the best of the autumn-blooming group. The earliest spring Crocus made a mid-February appearance in an assortment of refined colors. The second week of march saw additional Crocus come into bloom with the subtle lavender/purple blend of producing 1.5" pointed tepals in a highly attractive shade of rosy purple. It is the perfect bulb for anyone bored with the overbred gaudy tulips of commerce. It was put near enough to Muscari botryoides 'Album', a white flowering grape-hyacinth, to suggest the two would make a good pair for interplanting next year. Anemone blanda was only real disappointment in the bulb department in that over 100 roots of 4 cultivars produced less than 20 blooms. 'Radar', a more expensive "red" cultivar, did little more than produce medium pink flowers in our climate, but these have been quite attractive. I think I will rename 'White Splendor' something like 'White Disaster' as it bloomed only about 15% of its potential!

In the herbaceous perennial line, Potentilla villosa has been one of the first to bloom, displaying 1" yellow flowers above a 3" mat of silvery leaves. Its combination of yellow and silver make it a premium species for planting near deep violet-blue bulbs such as Muscari and some Crocus. Arabis procurrens, one of the best rock garden plants for spring, produced small racemes bearing delicate white flowers over a tuft of very bright green foliage. Draba repens and Erinus alpinus 'Albus' also bloomed at this time but our plants need another year to give a good show of color. The deeply notched petals of Erinus closely resemble Phlox bifida but it has a foliage quality better than any phlox that I know. In fact, Erinus would probably better known if its bloom time did not overlap with more vigorous and adaptable Phlox species.

The last week of March sees Phlox subulata, allied species, and their hybrids come in glorious display. As there are over 75 named cultivars of various procumbent Phlox in the world it is best to purchase plants from nurseries at the time of bloom or choose cultivars based on reliable books. Many plants in the trade have the most abominable colorations of mauve magenta, become sparse/open with age, an have light green foliage all summer. Good cultivars are characterized by compact moderate growth, deep green leaves, and petals that have clear and sharp color.

Towards the later part of March and early April we got full color from Muscari or grape-hyacinth species. Muscari 'Blue Spike' is a superb choice for rich deep violet-blue color, dense wide inflorescences, and long bloom time. Succari ambrosiacum is not particularly notable for its flowering this year, but seems worthwhile for a spreading-contorted leaves in a silvery blue color that resemble Allium

senescens 'Glaucum'. Puschkinia libanotica and Scilla sibirica 'Alba' have also done well this year. May favorite dwarf tulip after I. pulchell 'Violacea' is Tulipa bakeri with delicate pink tepals with canary yellow banding inside. It is essentially a bicolored tulip if one views it from a topview. Among the dwarf Narcissus I am once gain struck with the delicate beauty of N. bulbocodium or hoop-pitticoat narcissus. Just as N. serotinus (autumn) was virtually all perianth, this has flowers that are nearly all cup or crown (corona). Also topping my list of favorites are the various cultivars of N. triandrus. There are a number of worthwhile selections on the market but it would be hard to improve on 'April Tears' that is commonly sold in garden centers. 'April Tears' is taxonomically equivalent to the wild species according to most authorities but may have benefited from horticultural selection down through the ages. Paronychia syrphyllifolia is perhaps one of the most invisible blooming species in our rock garden this year. I spent a few minutes dissecting the white structures on it stems to see if they were in fact flowers - they are! it certainly has not made a gigantic splash of color but is attractive for its dense minute foliage and white terminal flowers that give it mosaic appearance. It was also rewarding to see Frittillaria assyriaca in flower for the first time with its upright stems bearing dropping bells of greyish-purple an yellow. It too is one of those bulbs that you have to appreciate from 2 feet away or less. I would also like to put in a plug for Viola rafinesquii, the miniature violet of lawns. Although it can be invasive in dry soils, its spring flurry of white, lavender, or light purple flowers is worth any subsequent weeding you have to do. In fact, by the time you notice its foliage it is blooming and too nice to rip out. After bloom most of it should be removed since it only takes a few flowers to assure its massive return the next year.

Although these are not blooming plants, Hypericum cerastoides and Hypericum repens are very superb foliage ground covers this time of year. Hypericum cerastoides bears silver-blue leaves in dense procumbent mats that contrast well with dwarf bulbs. Hypericum repens has greener, narrower leaves and an equally perfect ground cover form. Neither have bloomed for use but both sustained virtually no winter damage and are valuable for their spring foliage effect alone. Hypericum repens is extremely vigorous and has increased its size over 20 times since last year.

This coming year the rock garden will e expanded to the adjacent planting bed along with the white pine hedge. We will be obtaining larger boulder-sized stones so as to create newer and larger habitats than are possible with smaller stones. A large seed sowing operation has been started and will continue to provide many unusual and rare plants for the Arboretum's herbaceous collections, including many suitable for alpine gardening. Hundreds of packets have been sown from Thompson/Morgan, Chiltern (of England), park's, and various Rock Garden societies. It is always exciting to try new plants, particularly if they haven't been grown in North America before.

Eventually (we hope) a large microclimate-oriented rock garden will be constructed in the Western ARboretum to accommodate still more species and cultural conditions. There are also plans to add an alpine house for those species with very exacting season requirements. These new areas should more effectively control problems of excessive summer moisture, very warm nights, and foliar dessication.

Anyone interested in finding out more about rock gardening can contact the following societies, each of which have high quality journals, large seed exchanges and book distributions:

Mr. Norman Singer, Secretary (general membership $15.00 includes

American Rock Garden Society quarterly bulletin and annual seed exchange)

SR 66 Box 114

Norfolk Rd.

Sandisfield, MA 01255

Mrs. R. Law, Subscription Secretary (general membership $15.00 US includes

The Scottish Rock Garden Club highly quality semi-annual journal and

Kippielaw Farm annual seed distribution)

Haddington

East Lothian EH41 5PY, Scotland

The Secretary (general membership %15.00 US includes

The Alpine Garden Society quarterly bulletin and annual seed exchange)

Lye End Link

St. John's Woking

Surrey, England

The rock garden and hardy succulent collection now contains approximately 290 taxa of some 108 different genera. An additional 60 taxa are planned to be added in 1985 for use in the expanded second plot area. As of march 1985, the collection contains the following taxa:

Acaena argentea Campanula porscharskyene

Acaena sp. Campanula pulla

Acantholiman arexanum Campanula sacifraga

Acantholiman glumaceum Carmichaelia enysii

Achillea tomentosa Colchicum 'Lilac Wonder'

Achillea tomentosa 'King Edward' Crocus 'Blue Bird'

Achillea tomentosa 'Nana' Crocus 'Blue Pearl'

Adenophora takedae Crocus 'Brassaband'

Aethonema 'Warley Rose' Crocus chrysanthus 'Cream Beauty'

Ajuga metallica 'Crispa Purpurea' Crocus 'Lady Killer'

Ajuga reptans 'Burgundy Glow' Crocus laevigatus var. fontenayi

Allium karataviense Crocus ochroleucus

Allium moly Crocus pulchellus

Allium neopotitanum Crocus sativus

Allium ostrowstianum Crocus 'Saturnus'

Allium senescens 'Glaucum' Crocus speciosus

Alyssum serpyllifolium Crocus speciosus 'Albus'

Andryala aghardii Crocus speciosus 'Cassiope'

Anemone blanda Crocus speciosus 'Conquerer'

Anemone blanda 'Radar' Crocus 'Taplow Ruby'

Anemone blanda 'Rosea' Crocus tomasianus

Anemone blanda 'White Splendor' Crocus 'White Triumpator'

Aquilegia flabellata 'Nana' Crocus 'Zwanenburg Bronze'

Arabis ferdinand-coburgii 'Variegata' Cryptomerja japonica 'Tansu'

Arabus procumbens Delosperma cooperi

Arenaria tetraquetra 'Grahatensis' Delosperma nubigenum

Artemsia schmidtiana 'Nana' Dianthus carthosianum

Arum italicum Dianthus gratiopolitanus 'Tiny Rubies'

Asperula pontica Dianthus myrtinervis

Aster alpinus (mixed colors) Dianthus nardiformis

Babiana (mixed colors) Dianthus noeanus

Bellium minutum Dianthus pindicola

Berberis pumila Draba sp.

Bolax glebaria Draba olympica

Brachycome nivalis 'Alpha' Draba repens

Brodiaea laxa Eranthis cilicica

Campanula cochillearifolia 'Miranda' Erigeron 'Pink Jewel'

Campnaula pilosa 'Dasyantha' Erinacea pungens

Erinus alpinus 'Albus' Microcachrys tetragona

Erysimum kotschyanum Muscari azureum

Festuca ovina 'Solling' Muscari 'Blue Spike'

Festuca scoparia 'Pic Carlit' Muscari botryoides 'Album'

Festuca vallesiaca var. glaucescens Muscari plumosum

Filipendula hexapetala 'Floreoplena' Narcissus bulbocodium

Frittilaria assyriaca Narcissus bulbocodium 'Obesus'

Frittilaria persica Narcissus caniculatis

Funchsi pumila Narcissus jonquilla

Galanthus nivalis 'Plenus' Narcissus juncifolius

Galanthus nivalis 'Sam Arnott' Narcissus lobularis

Genista dalmatica Narcissus minor var. pumilis 'Plenus'

Genista delphinensis ('Rip Van Winkle')

Geranium dalmaticum 'Album' Narcissus serotinus

Geranium stapfianum Narcissus 'Silver Bells'

Geranium subcaulescens Narcissus triandrus ('Angel Tears')

Gobularia cordifolia Oenothera pumila

Gobularia trichosantha Ophiopogon japonicus (white-striped)

Gysophila cerastoides Ophiopogon planiscapus var. arabicus

Gypsophila franzii Opuntia compressa

Gypsophilia tenuifolia Orostachys iwarenge

Helianthum oblongatum orostachys japonicus

Helichrysum bellkidoides Paronychia syrphyllifolia

Helichrysum selago Pellaea brachytera

Hermodactylus tuberosa Penstemon 'Bretenbush Blue'

Herniaria glabra Penstemon caespitosus 'Claude Barr'

Hieracium pilosa Penstemon newberryi

Hutinsia alpina Penstemon pinifolius

Hypericum cerastoides Penstemon roezillii

Hypericum repens Penstemon rupicola 'Diamond Lake'

Iberis sayana Petrophytum herdersonii

Ipheion uniflorum Petrorhagia saxifraga 'Double White'

Iris cristata 'Alba' Phlox x douglasii 'Beauty of Ronsdorf'

Iris danfordiae Phlox x purpurea 'Arroya'

Iris histrio 'Aintabensis' Phlox subulata (clone)

Iris histriodes 'Major' Phlox subulata 'Ft. Hill'

Iris reticulata (purple clone) Pimelia coarctica

Iris reticulata 'Cantab' Polygonum vaccinifolium

Iris reticulata 'J.S. Dijt' Potentilla aurea 'Vera'

Iris reticulata 'Joyce' Potentilla villosa

Iris reticulata 'Violet Beauty' Pterocephalus parnassii

Iris tuberosa Puschkinia libotanica

Iris unguicularis Raoulia sp. (2)

Iris verna Raoulia glabra

Jovibarba heufelii 'Geranimo' Raoulia tenuicaulis

Joyibarba heuffelii 'Hot Lips' Rosmarinus offinalis 'Golden'

Joyibarba squamata 'Blue Star' Rosmarinus officinalis 'Lockwood de Forrest'

Leucojum aestivum Salvia caespitosa

Lewisia cotyledon Saxifraga sp.

Limonium minutum Saxifraga x elizabethae

Linum salsaloides 'Nanum' Saxifraga stolonifera

Lithodora diffusa 'Grace Ward' Scabiosa scabra 'Pterocephala'

Margyricarpus setosus Scilla bifolia

Maxus reptans Sedum sp.

Mazus reptans 'Alba'

Sedum albo-roseum 'Variegatum' Sempervivum 'Sam Wise'

Sedum 'Autumn Joy' Sempervivum 'Serendipity'

Sedum brevifolium var. quinquefarum Sempervivum 'Shirley Moore'

Sedum cauticolia Sempervivum 'Silverine'

Sedum coccineum 'Royal Pink Sempervivum 'Silver Thaw'

Sedum confusum Sempervivum 'Spanish Dancer'

Sedum dasyphyllum var. rifanum Sempervivum 'Stuffed Olive'

Sedum divergens Sempervivum tectorum 'Super Giant'

Sedum ewersii var. homophyllum Sempervivum 'Wierdo'

Sedum kamschaticum Silene alpestris

Sedum kamschaticum 'Variegatum' Silene alpestric 'Floreoplena'

Sedum lydium Silene maritima

Sedum maximum 'Purpureum' Silene polypetala

Sedum middendorfianum from Manchuria Silene 'Robin White Breast'

Sedum 'Moonglow' Sisyrinchium douglasii

Sedum moranense Solidago spathulata 'Nana'

Sedum nicaense Sparaxis (mixed colors)

Sedum nevii Stachys candida

Sedum pluricaule 'Rosenteppich' Stachyl densiflora

Sedum reflexum 'Cristatum' Sternbergia lutea

Sedum senanense Symphiyandra wanneri

Sedum sexangulare Thymus arcticus subsp. praecox

Sedum 'Silver Moon' 'Languinosus'

Sedum spathulifolium 'Cape Blanco' Thumus cilicicus

Sedum ternatum 'White Waters' Thymus doefleri

Sempervivum 'Bedazzled' Thymus membranaceous

Sempervivum 'C. William' Thymus pulegoides

Sempervivum 'Cherry Vanilla' Thymus serphyllum 'Coccineus'

Sempervivum ciliosum var. ciliosum Triteleoa laxa 'Queen Fabiola'

Sempervivum 'Cleveland Morgan' Tulipa bakeri

Sempervivum davisii from Corah Gorge Tulipa dasystemon

Sempervivum `Edge of Night' Tulipa marjolettii

Sempervivum 'El Toro' Tulipa pulchella 'Violacea'

Sempervivum 'Firebird' Tulipa urumiensis

Sempervivum 'Flamingo' Verbascum 'Letitia'

Sempervivum 'Glowing Embers' Verbena bipinnatifida

Sempervivum 'Granat' Veronica austriaca subsp. teucrium

Sempervivum 'Highlight' 'Trehane'

Sempervivum 'Jade Sleeper' Veronica incana

Sempervivum 'Jungle Shadows' Veronica repens

Sempervivum 'Lavender and Old Lace' Viola adonca 'Alba'

Sempervivum 'Mars' Vitalinana primulaeflora 'Tridentata'

Sempervivum 'Mercury' Zauscherneria californica var. etteri

Sempervivum montanum x 'Rubrum'

Sempervivum 'Oddity'

Sempervivum 'Ohio Burgundy'

Sempervivum 'Olivette

Sempervivum 'Packardian'

Sempervivum 'Red Mountain'

Sempervivum 'Rhodanicum'

Sempervivum 'Risque'

Sempervivum 'Rita Jane'

Sempervivum 'Rotund'

Sempervivum 'Rubicon Improved'

New Catalogs and Plant Sources of Interest

A first catalog from a new firm contains a remarkable array of thousands of rare and unusual plants in a 44-page listing available from: Glasshouse Works, Plants Traditional and Unusual, 10 Church Street, Box 97, Stewart, Ohio 45778-0097 (614-662-2142). They are computerizing various lists of plants for future specializing listings for various audiences. This long-term goal is to assemble and

publish a descriptive manual of all the rare, unusual, and traditional plants maintained in their permanent collection. An unusual service is the sale of collections of 100 different, labeled plants to organizations or retail sales firms who wish to offer unusual plants for sale, or to individuals who wish to quickly and inexpensively acquire grops of materials. They also wholesale, and do international shipments. Most listings in the current catalog are for greenhouse-type materials but a careful hunt turns up numerous possibilities for local North Carolina gardens, e.g. several Agapanthus; 4 Crinum; 8 Acorus cultivars; about 120 ferns - both indoors and hardy; 9 different Aspidistra elatior cultivars; about 120 ferns - both indoors and hardy; 9 different Aspidistra elatior X Fatshedera lizei!; many Hedera helix as well as 4 H. canariensis, 3 H. nepalensis, and H. rhombea; 4 Laurus nobilis cultivars; 3 Ligularia tussilaginea; 4 Osmanthus; a mind-blowing list of Sansevieria and Peperomia (for indoors); 12 rare Japanese cultivars of Rohdeea japonica; 4 Serissa foetida; numerous Agave, and many, many others. Not available by mail order, but at teh nursery location they also offer starter plants of dwarf an variegated conifers, broadleaf evergreens, deciduous shrubs, unuual perennials, herbs, hanging baskets, bonsai, cycads, and orchids. I can't imagine what the place must look like - but certainly one of teh most comprehensive list of plants I've ever seen. My first order just going in so we'll see how they do. Plant prices mostly $1-4 each, with rarer items up to $15.

An exciting 32-page catalog was received from Eastern Plant Specialties ("...your source for hard-to-find plants."), P.O. Box 40, Colonia, NJ 07067 ($2.00 for catalog). Their list includes choice rhododendron hybrids ($6-30); a complete selection of the southeastern United States native deciduous azaleas species (mostly $10-20); 13 different Kalmia including K. cuneata, and K. latifolia 'myrtifolium'; 13 Pieris including P. Brower's Beauty and P. phillyreifolia; a wide array of excellent companion plants with such choice things as Chamaedaphne, Corylopsis, Cyrilla Daphne 'Carol Mackie', Fothergilla, Leucothoe kieskei, Acer griseum, Cercidiphyllum, Chionanthus, Styrax obassia and Trochodendron. An extensive list of about 300 choice dwarf conifers (grafts to 3 gallons - $10-30) is included - e.g., 15 Cedurs, 12 Cryptomeria, 33 Tsuga canadensis and such unusul species as Picea glehni, P. likiangensis, and P. wilsoni. Prices are a bit higher than I'm accustomed to seeing from some other sources - but so many plants listed are difficult to find elsewhere that I would suggest trying them for some choice goodies. By sheer control of my incredible will power on obtaining plants, I was able to restrict myself to an order of 7 things our collections can't live without (not bad considering my initial list of things watned was 63 items long).

Although I've promoted them before, a recent look at the newest catalog of Ray adn Peg Prag of Forest Farm, 9900 Tetherow Road, Williams, Oregon 97544 stimulates me to agiain enthusiastically promote their firm. I know of no other source of such a wide array of choice woody plants (660 taxa) at such reasonable prices. They sell small liners - rooted cuttings and year-old seedlings for $1.75-3.75 apiece (with Acer griseum at $5.75 the sole exception). Some examples of their "goodies" would include: 13 abies, Asimina, Cercidiphyllum, Chamaecyparis nootakatensis 'pendula', Chimonanthus, Cornnus, controersa, C. mas and 10 others, 4 Cupressocyparis, 27 Eucalyptus, Eucommia, Evodia, Glyptostrobus, Gordonia, Halesia, 4 Hamamelis, Hovenia, Idesia, 5 Ilex verticillata, Kalmiopsis, Leycesteria, Loropetalum, 4 Magnolia, 4 Mahonia, Parrotia, 41 Pinus, 15 Quercus, 15 Rosa species, 5 fine Salix, 3 Styrax, Thujopsis, Torreya, 4 Tsuga species, Ungnadia, 14 Viburums, Widdringtonia, and Xanthorhiza.

The Winter 1985 issue of te American Confier Society Bulletin (Vol. 2:13) has several advertisements from conifer suppliers that are new to me and are not included in our current 20-[age sources bulletin. I've not yet dealt with any of the following firms but I expect them to be useful additions for the conifer specialist.

Honey Run Conifers, Honey Run, Layton, NJ 07851 (201-948-4157). "Growers of choice coifers; rare, unusual, dwarf and otherwise. Write or call for our catalog."

Lund Brothers Nursery, 1008 Cowpath Road, Hatfiel, PA 19440 (215-855-0360). "Usual and unusual conifers; custom grafting."

Buchholz and Buchholz Nursery, Route 1, Box 80, Department AC, Gaston, OR 97119 (503-985-3253). "Propagators and growers of an exciting line of plant material."

Twombly's Nursery, Inc., 162 arn Hill Road, Monroe, CT 06468. "Propagator and grower of dwarf and cultivared conifers."

I was given a copy of an article (which appeared in the Winston-Salem Journal (pg. E8), March 10, 1985 describing Sedge Garden Nursery on Highway 150 in Sedge Garden. It is operated by Mike Garner and Sal Schiappa and features unusual plants not commonly available in North Carolina. The nursery is severn years old and carries perennials, herbs, many azaleas and dwarf shrubs, and a wide variety of the slow-growing conifers. Though I've not yet been to teh nursery, the photo of their display garden makes me feel it would be a good stop for gardeners hunting unusual materials within North Carolina.

Another new North Carolina nursery offering a very special (and wonderful) range of plants is Montrose Nursery, P.O. Box 957, Hillsborough, North Carolina 27278 (919-732-7787) operated by Mrs. Nancy Goodwin. Her specialty is hardy Cyclamen species and cultivars which she grows from seed. Imported tubers are often dried out and difficult to establish whereas local fresh plants treasures can become in NorthCarolina. We are fortunate indeed to have a local source and wish Mrs. Goodwin great success in her specialty palnt venture. To visit the nrusery take NC 751 from Durham to US 70; turn left on 70 (Bypass - not business) and continue for 6.3 miels; 0.6 miles past the Eno River turn left on St. Mary's Road at store called "Pantry". Go 0.8 miles down St. Mary's Road adn turn left through brick gates just before the school. (Call for appointment before visiting please.)

Although the focus of the arboretum is ornamental landscape plants, supporting friends have wide horticultural interess and I think it important to publicize an important new contribution in the area of home vegetable gardening. The Garden Seed Inventory is an inventory of 239 seed catalogs in teh United States and Canada. It lists all of teh non-hybrid vegetable and garden seeds still being offered ind inlcudes: variety name; range of days to maturity; a list of all its known sources; and the plant's description. This 8 1/2 x 11"

448-page book took over three years ot compile, describes 5,785 varieties, and is being heralded by both gardeners and scientists as a landmark study. Most gardeners view The Garden Seed Inventory as teh ultimate seed catalog and are using to to locate alternate sources when theylose access to favorite varieties. For the first time they can search through everything available to locate varieties that are perfect for their climate, diseases, andpests. Northern or high altitude gardeners can locate hardy and short season varieties. Tremendous consolidaton is occurring right now within the garden seed industry. Multi-national agricyemical conglomerates are buying out small family owned seed companies and dropping their collections of regionally-adapted standard varieties. The Garden SEed Inventory was actually developed as a preservation tool, because it was feaered that most of our garden seed heritage was in danger of being lost forever due to this consolidation and current economic conditions. With the completion of this book, we see that 48% of all these non-hybridgarden seeds are available from only one of the sources (out of 239 possible soruces). It is imperative that gardeners, plant breeders, adn preservation projects buy up these endangered garden seeds while sources still exist. The book is available for $12.50 (softcover) or $20.00 (hardcover) from Seed Savers Exchange, Kent Whealy-Director, 203 Rural Avenue, Decorah, Iowa 52101. Seed Savers Exchange is a not-for-profit, tax exempt, publically supported organization of vegetable gardeners who are working together to save heirloom vegetable varieties and endangered commercial varieties from extinction. If sufficient revenue is generated by The Garden Seed Inventory, a Preservation Farm will be purchased near Decorah, Iowa where our vegetable heritage will be maintained and protected on a permanent basis.

Catalogs often provide interesting reading beyond plant information per se. I like the original touch as in the recent Endangered species catalog which states: "WE CAN'T FILL ORDERS IN A HURRY - if you are in a hurry - we will not be a happy match. We do not mass-produce plants as fast as possible, pack cheaply and then ship by Crash adn Burn Airlines or The Slow and Obnoxious Trucking Corporation. We do grow slowly, pack carefully adn replace plants which arrive bruised, abused, cooked, frozen or dead, or plants which refuse to grow." Other delights occur through teh catalog and the original art works for sale are treasures.

In the last issue I gave a list of tool and supply catalogs for obtaiing unusual items. Another excelelnt catalog was just received from Green River Tools, 5 Cotton Mill Hill, P.O. bBox 1919, Brattleboro, VT 05301 (802-254-2388). It contains such things as soil-block makers,double digging tools, a one-handed push hoe (the most useful weeding tool from my experience), pavement weeders, children's tools, a stone-lifte cart, birdhouses (where else would one find an earwig house and a bat house??), saws and pruning tools. Beautifully illustrated and a joy to read.

A recent mailing from the North Carolina Botanic Garden Herb Volunteers gave teh following list of herb gardens open to the public in North Carolina. With our many excellent commercial herb nurseries and these gardens to visit - gardeners interested in herbs in our state have excellent resources at hand.

Bethabara erb Tarden, Winston-Salem Mordecai Gardens, Raleigh

Biltmore Country Market, Asheville Old Salem Herb Tarden,

Biltmore Gardens, Biltmore Winston-Salem

Burgwin-Wright House, Wilmington Page Smokehouse Garden, Cary

Country Doctor Museum Herb Garden, Poplar Grove Plantation,

Bailey Wilmington

Dolley madison Dye Garden, Greensboro Ravenscroft School Herb Garden,

Elizabethan Garden, Manteo Raleigh

Herb Garden Complex, Herb Volunteers, Reynolds Herb Gardens,

NCBG Winston-Salem

Joel Lane House, Raleigh Sword of Peace Herb Garden,

John Haley House Herb Garden, High Point Snow Camp

Latimer House Herb Garden, Wilmington Tarboro Herb Garden, Tarboro

McNairy House Herb Garden, Greensboro Tryon Palace Herb Garden,

Medfield Estates Garden, Cary New Bern

Wing Haven Gardens, Charlotte

Book News and Quotes from Recent Reading

A most fascinating book on garden history originated as an exhibition catalog for a museum exhibition held at The Strong Museum in September 1984. Gardening in America, 1830-1910 by Patricia M. Tice is available from The Strong Museum, Rochester, NY 14607. (SB451.3.T53; 94 p. - $9.95 + $2 shipping). Many wonderful black and white photos of gardeners, plants, equipment, etc. are presented

and the text is a delight to read and full of interesting facts. It documents well the outside technological and social factors that often have major impact on gardening practices - such as the Erie Canal on transportation, or development of municipal water systems in the 1840's which allowed watering gardens. Prices from a 1839 catalog of the famous Ellwanger and Barry Nursery show that an extensive garden of ornamentals was only for the well-to-do. At that time $1.50 was an average days wage for labor, and plant prices were: Balsam Fir 75¢, China rose $2.50, Weeping Willow 75¢, Honeysuckle 50¢, Moss Pink Rose $6.75, Cactus $3.00, Peony $1.00, Hyacinth 50¢. Considering today's equivalent day's wage for labor at $30 - can you imagine the public's reaction now if hyacinths were $10 each or a rose bush at $120! A most enjoyable and recommended book. The appendix with garden plans for the period and an excellent bibliography would be useful for anyone interested in doing historic gardens.

For those interested in bulbs; a high quality reference guide to native European bulbs has recently been published. It is Bulbs, the Bulbous Plants of Europe and Their Allies Christopher Grey-Wilson and Brian Mathew. Available through the Stephen Green Press, Brattleboro, VT 05301 for $32.95. It has line drawings and color illustrations of many species, and covers all the petaloid monocots of Europe.

"Be cheerful while you are alive." Ptahhotep 2400 B.C.

The New England Wildflower Society has published a listing of native plant offerings throughout the United States. This 53-page booklet is available for $3.50 from NEWFS, Dept. NS., Garden in the Woods, Hemenway Road, Framingham, MA 01701.

A specialized technical book covering an area of interest in the ornamentals world is Double Flowers, a Scientific Study (184 p.) by Joan Reynolds an John Tanpion. Available for $22.50 from Van Nostrand Keinhold, 7625 Empire Drive, Florence, KY 41042.

Two new sources of books to purchase have been added to our sources guide. For lists write to:

Botany Catalogue Gary Wayner, Bookseller

Julian J. Nadolny Rt. 3, Box 18

121 Hickory Hill Road Fort Payne, AL 35967

Kensington, CT 06037

A book that should be of great value to homeowners, maintenance people and nurserymen is How to Identify Rhododendron and Azalea Problems by A. L. Antonelli, R. S. Byther, R. R. Maleike, S. J. Collman and A. D. Davison ($3.50 with check payable to: Cooperative Extension PUblications. Send to Bulletin Office, Cooper Publications Building, Washington State University, Pullman, Washington 99164-5912). It has many color photos and covers everything from weevils to indumentum.

"Let your boat of life be light, packed with only what you need -- a homely home and simple pleasures, one or two friends, worth the name, some one to love and some one to love you, a cat, a dog ... enough to eat and enough to wear .." Jerome Klapka Jerome, Three Men in a Boat, Chapter 3.

NEW AZALEA BOOK - Azalea enthusiasts and nurserymen now have an inexpensive pictorial guide available to them which features over 140 color photographs of the most popular azalea varieties used and sold in North Carolina. The new book, Great American Azaleas, was written by Jim Darden, Chairman of the Horticulture Department at Sampson Technical College in Clinton. Jim owns Darden's Nursery which has collected over 300 varieties. The purpose of the new book is to provide both the consumer and nurseryman with a collection of photographs and information which can be used as a guide for buying or selling azaleas. the 96 page format is similar to the Ortho Books, Sunshine Books and others currently on the market. However, the great difference is that Great American Azaleas is devoted entirely to azaleas. Also, another difference is the inclusion of a great deal of easy-to-use tabular information on nearly 500 azalea varieties. Descriptions of each variety include bloom color and form, flower size, season of bloom, growth habit, plant height, hardiness zone, hybrid group of origin and for most varieties - genealogy. "It is hoped," says Jim, "that consumers can use the book to select the varieties and colors that they need in the landscape intelligently rather than simply buying red, white, or pink flowers. Also, nurserymen can use this guide to sell azaleas, both during the blooming season, and more importantly, during the majority of the year when azaleas are not in bloom" Great American Azaleas begins with a discussion of azaleas' flower colors, showing photographs and tables for seven different bloom colors. For instance, if a person wants white azaleas, the White Azaleas section of the book will show them several close-up photos of white blooms, along with a table listing 15-20 good white-blooming varieties and their characteristics. Similar sections are included on early, mid-season and late-blooming varieties. Azalea history and movement to America are treated likewise, with sections on the original species, Belgian and Southern Indicas, European hybrids, and especially the Kurumes and Satsukis. The book give major emphasis to American breeders and hybrid groups. Photos and tabular information are included for over 30 such azalea collections, including Ben Morrison's Glenn Dales and Back Acres, Robert Gartrell's Robin Hill azaleas, along with the varieties by Joseph Gable, Alphonse Pericat, Peter Girard, and Anthony Shammarello. Other popular hybrid groups include the Sherwood, Hershey, Rutherford, Aichele, Linwood Hardy, Pennington, Kerh, and Carla hybrids. Seven of the NCSU Carla hybrids are pictured. TEchnical assistance for the book was graciously provided by Dr. Fred Cochran at NCSU. Great American Azaleas is available from the Greenhouse Press, 1239N Sunset Avenue, Clinton, NC 28328 for $9.95 plus shipping. It will also be widely available in North Carolina at garden centers and bookstores. (Above article by Bill Wilder in NCAN Nursery Notes). I have a copy now and it is a wonderful new addition t our reference books - highly recommended.

In the last newsletter I announced we would be getting a computer and in the future I would be doing writing with it and keeping our plant records in its innerds. After four months with the computer on my desk the rest of this page is the sum total of my computer composing efforts, representing two days work that I could have done with pen and paper in an hour and a half. Surely practice will make it a more professional operation in the future.

Anyone interested in herbs will enjoy a new paperback publication: Herb Garden Design by Faith Swanson and Virginia Rady (University Press of New England, Hanover, NH03755. ISBN 0-87451-297-2, 155 p.). The major feature of the book is a wide variety of detailed designs for herb gardens of any imaginable kind. The designs are well-drawn, easily interpreted and supplemented with observations and herb lists for planting in each. They span the range from a beginning child's garden to advanced herb collector's gardens; from window boxes to Biblical herb gardens for churches; for a 1850 smokehouse or a contemporary garden; for a Shakespeare scholar; a moonlight garden; for rose lovers; knotgardens; on and one. Even if one were not interested in herbs per se, the book would still be useful just for it's exploration of varied design concepts. As publicity on the book states; "this will become a standard reference for landscape architects, horticulturists, garden clubs, arboretums, nurseries, and restoration organizations."

I've often written about my love for Henry Mitchell's writing. I recently discovered a book written in much the same vein that I would also recommend to readers. It is not a new book, having been first published in 1980 - but better late than never in discovering pleasurable things. HOME GROUND by Allen Lacy (Farrar Straus Giroux, 19 Union Square West, New york 10003. ISBN 0-374-17254-4, 259 p.) As a method of giving a "feel" for the book I can't do better than to use quotes from the author himself - and another reviewer's comment on the dust jacket. How could a book start off with a better line than the following? "This book is about some of the plants I have lived with and loved (and a few that I have disliked or that did not return my affection) over a lifetime of gardening that got under way in Irving, Texas, during World War II, after I bit a teacher on the leg and was sentenced to do penance for this gross misdeed by working in an iris patch." Well, we all got our start in the love of gardening in different ways! Noted author Eleanor Perenyi summarizes the book thusly - "Allen Lacy is the ideal gardener - opinionated, a collector of off-beat plants and information, and something of a memoirist. A browse through HOME GROUND is like spending an afternoon with a civilized gardening companion who has chosen to share some of his ideas and secrets." Here are a few enjoyed quotes. "Gardening is in large part a phenomenon of attention and perception, by which I mean that one is constantly learning things one ought to have known long ago, suddenly seeing things that were there all along." In a delightful chapter on garden advice columns, the following tidbits appear (selected from several pages of text) - "they answer our questions, and it usually turns out that we are in even worse trouble than we suspected - e.g. Questions: I have just noticed some tiny purple spots on the stems of the dieffenbachia in my living room. They have no legs or wings ... what should I do? Answer: Your dieffenbachia is infested by artichoke mites, very small insects with microscopic legs. Unfortunately, they carry Herpes IV, a virus which spreads rapidly to apple trees, juniper ... and humans, where it causes impotence, a yearning to travel to places you can't afford ... burn your house to the ground immediately, see a physician, and make certain that you have a valid will...usually, by the time someone writes ... advice, it's too late. The columnists ... seem unanimously to believe that gardens are made by rational foresight, prudent planning, and prompt attention to the right thing at the right time. My garden whispers something else in my ear. It has come into being through sudden impulses, happy mistakes, and unfortunate accidents, and my own enduring willingness to tolerate ambiguity nd to practice procrastination whenever possible. The gypsy moths and I love it." Highly recommended for good winter evening reading.

Picture of SIR WALTER RALEIGH HISTORICAL GARDEN

The Sir Walter Raleigh Historical Garden seen above is the second phase in the master plan for the Sandhills Regional Arboretum, located on a fourteen-acre, wheel-chair accessible site on the campus of Sandhills Community College. The now-completed first phase of the Arboretum is the Ebersole Holly Garden, generally regarded as one of the most extensive holly collections in the eastern United States. The Sir Walter Raleigh Historical Garden will occupy just over one acre in the ARboretum. This historical garden concept began as a part of the statewide celebration of America's Four Hundredth Anniversary festivities commemorating the attempted colonization of Roanoke Island in 1584. The plan calls for an historic replica of a period garden similar to those which existed in Elizabethan times. The purposes of the Sir Walter Raleigh Historical GArden are basically education, creation and enjoyment of beauty, and cultural enhancement. The garden will be created under the supervision of the Landscape Gardening faculty; students will plant and tend it, thus providing "hands-on" horticultural experience. The completed Garden will be a source of enjoyment for the college community as well as for citizens from the area, the state and for other visitors. PUblic school courses such as history, social studies and horticulture would benefit from visiting the garden. The cultural character of the Sandhills area as well as the State of North Carolina will be enhanced by this lovely garden. This project is most deserving of public support and I would encourage Friends of the NCSU Arboretum (now the JC Raulston Arboretum) to send a check in support. All contributions are tax deductible. Checks should be made to "Sandhills Community College - Sir Walter Raleigh Historical GArden" and mail them to Sandhills Community College - SWRHG, Route 3, Box 182-C, Carthage, NC 28327.

I received a brochure and packet of postcards showing a beautiful memorial garden at the First Presbyterian Church in Concord, North Carolina that those traveling through that part of the state might like to stop and visit. The cemetery was founded in 1804 and contains many fine old plants. The Memorial Garden was developed in 1930 and presently consists of a series of brick terraces on several levels with retaining walls; a large central fountain; and surrounding beds planted heavily with seasonal displays of spring bulbs, summer annuals and fall chrysanthemums.

It Was Truly Bad - Andrew Sterbenz, 18 of Delran (N.J.) High School, has achieved the dubious distinction of winning first prize in a bad-writing contest conducted by English Professor Scott Rice of San Jose State University. United Press International says the winning entry, which rose, like curdled mil, to the top of thousands of entries, started like this:

"He did not notice the pouring rain, the thunder, the lightning, the futile attempts of the sun to pierce through the relentless clouds in the early dawn as he sauntered into Dunkin' Donuts, removing his rainsoaked greatcoat, brushing a mauve thread from the sleeve of his genuine polyester imitation leather jacket, inhaling the intoxicating aroma of cream-filled eclairs and double chocolate munchkins, and gazing at the waitress through his polarized Cool-ray photo-sensitive corrective lenses - such pleasures were for lesser men, he thought."

Commented professor Rice: "To write that badly, you have to be good."