

JC Raulston Arboretum

Friends of the Arboretum Newsletter

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J. C. Raulston

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ANNOUNCEMENTS AND COMING EVENTS

(7/1/85) - I guess by now it's almost traditional to begin the newsletter with some sort of "why 'm late" story. In the last newsletter it was about a person who felt that my excuses were the best part of the newsletter. There are all kinds of people and not all are so relaxed. On the other end of the spectrum, the day we were assembling the last newsletter for mailing I received a letter addressed to the "President of the NCSU Arboretum (now the JC Raulston Arboretum) Board of Directors". He demanded that Raulston be fired as arboretum director because the newsletters were late; that he did not join the Friends to support or help the garden but only to obtain current up-to-date information that would help his business; that the information being received was useless; that as "a serious businessman" he tolerated no lateness in his employees and wouldn't from the arboretum either; and so forth for another page. I sent a return letter (promptly) expressing deepest regrets and apologies, a full refund plus \$5 to compensate for his terrible inconvenience. Our "board of directors" (Tom and Mom cats, our four curators, Newell, and our six pink flamingos) met to vote on firing or keeping me and by a 7-6 vote (thank heavens I carried the flamingos by 4 to 2), I survived to continue my job which is officially allocated as an enormous 5% of my university job description. Even in our tiny garden it's never dull. Lots of good things to report and exciting events ahead. Enjoy the arboretum often.

(9/25/85) - Even with hard work and good intentions - the Gremlins stay with us to keep the newsletter late. On returning from six weeks in Korea, I find our department copy machine has been broken and unrepairable for the duration and the computer with our plant additions list is "down" - aaaugh!! Our apologies - we did try!

October 10 (Thursday) Slide Show - English Garden 1985 - Part II AND PLANT DISTRIBUTION. On June 26 we had our scheduled slide show to show gardens seen on the arboretum-sponsored tour of Ireland, Wales, and England (with excellent attendance) but there were so many gardens and so much to talk about that we only got half way through the material. Susan Little and David Swanson, local excellent landscape architects who were on the tour, will present the second half of the tour - Exbury, Nymans, Sissinghurst, Great Dixter, Wisley and many more gardens - at 8:00 p.m., Room 159, Kilgore Hall, NCSU Campus. After the show we'll have our major plant distribution of the year with many hundreds of very fine plants to give away.

October 16 (Wednesday) - Special Guest Lecture. We will have the honor and pleasure of hearing Christopher Lloyd who lives and gardens at Great Dixter in Sussex, England. Mr. Lloyd, who is considered by many of his fellow writers to be one of the best gardening writers of all time, will be in the United States during October as one of the featured speakers for the New York Botanical Garden's Symposium, "Landscaping with Perennial". He has graciously agreed to visit the NCSU Arboretum (now the JC Raulston Arboretum) after the symposium and will speak to us about "Some Plants I Have Enjoyed Growing". Since we hope to have a large audience for this talk, we will be moving its location to 3712 Bostian Hall. This is the large lecture room where I did the talk in 1982 about my trip to China. To get to Bostian, go through the parking lot behind Kilgore, east toward the Library, down the brick walk lined with magnolias. Bostian is

built over the walkway just at the entrance to the Brickyard. Go up the stairs, the lecture hall is on the Hillsborough Street side of the walk. We'll have maps on the doors of Kilgore that night. Do attend this wonderful event and bring everyone you know who enjoys gardening - if you know too many enthusiastic gardeners to bring all of them - at least, tell them about it!

October 20 (Sunday) - Special Guest Lecture. Mr. Peter Orriss, superintendent of the Cambridge University Botanical Garden will give a special lecture on "Creating a Winter Interest Garden" using examples from their newly created garden at Cambridge. Colored evergreen foliage, winter flowers, brightly colored barks, etc. can make a most exciting garden. We are very lucky to have the opportunity to hear this noted garden authority - be sure to attend. The lecture will be in the afternoon at 4:00 p.m. in Room 159, Kilgore hall. We'll have a few refreshments for those that would like to visit the Mrs. Orriss follow the talk.

October 26 (Saturday) 9 AM - 4 PM Groundcovers Workday.

November 9 (Saturday) 9 AM - 4 PM Arboretum Workday.

December 3 (Tuesday) - Friends of the NCSU Arboretum (now the JC Raulston Arboretum) Slide Show. We were scheduled for a program on May 14 that I was going to do on the past, present and future of the NCSU Arboretum (now the JC Raulston Arboretum) and some of the interesting plants in our collection. Dr. Gerald Straley of the University of British Columbia happened to be in town that day and graciously gave us an excellent program on Australian plants and gardens. We'll reschedule my original program and talk about "our" garden - rather than distant corners of the world for a change. Lecture at 4:00 p.m. in Room 159, Kilgore Hall.

IN MEMORIAM

In recent months two giants of the U.S. horticultural literature world have died leaving us mourning their loss, but most grateful for the literature they left behind and memories of such exceptional people.

ELIZABETH LAWRENCE, 1904-1985

Ironically, so few gardeners, and particularly current horticulture and landscape architect students, know of Miss Elizabeth Lawrence in North Carolina today - when she was so greatly admired and respected worldwide for her three classic garden books. Books which described her remarkable gardening research and observation in gardens in Raleigh and Charlotte. One of my greatest horticultural experiences was meeting Miss Lawrence and seeing her garden in Charlotte several years ago. Though frail and slow-moving, as we toured the garden I was astounded at her encyclopedic knowledge and recall. Every time I think I've learned something new on plant adaptability in the NCSU Arb - I go back and find she described its performance in her Raleigh garden 40 years ago. A most remarkable woman. The following obituary appeared in The Charlotte Observer, June 16:

"Author and landscape architect Elizabeth Lewis Lawrence had what friends called a rare combination of gifts, the brilliant scientific mind and the artistic talent to write classic gardening books. For more than 35 years at her Myers Park home on Ridgewood Road, she nurtured one of Charlotte's most striking little gardens with all the care she gave to writing such classics as *A Southern Garden*, *The Little Bulbs* and *Gardens in Winter*. Miss Lawrence, 81 died June 11 of heart failure at Pleasant Living Convalescent Center in Edgewater, Maryland, an Annapolis suburb. She had moved to Maryland in October to be near a niece, Elizabeth Rogers of Annapolis. A memorial service was held June 16 in Marietta, Georgia, where she was born to the late Samuel and Elizabeth Bradenbaugh Lawrence. She was buried at the St. James Episcopal Church cemetery in Lothian, Maryland. "She was a small wisp of a person, but I think she was one of Charlotte's giants," reflected John Jamison, a public relations consultant, avid gardener and longtime friend of Miss Lawrence. "I used to go through her garden with her, and she had this encyclopedic knowledge ... She was genuinely a scientist as well as a poetic writer." Longtime friend Hannah Withers said, "She was a very interesting person, and she was the first woman ever to graduate from the landscape design school at North Carolina State (college)." Miss Lawrence also had a degree in English from Barnard College in New York. Dr. W. B. Mayer knew Miss Lawrence even before she moved from Raleigh to Charlotte about 1947, he said, because he had bought her first book, "*A Southern Garden*," published in 1942 by UNC Press. That classic was reissued in 1967, then published in paperback in 1984. Miss Lawrence also wrote journal articles, book introductions and a gardening column for *The Observer* during the 1960s. "I think her columns were too elegant for the general public" Mayer said. "She was sort of the Jane Austen of the gardening literary world ..." Another book manuscript by Miss Lawrence, on what she called "*The Market Bulletin Ladies*" (country women who sell plants by mail order through notices in horticultural bulletins), is believed to be in the hands of a publisher. Mayer said she was active in the Royal Horticultural Society, North Carolina Wildflower Preservation Society, Rock Garden Society, Magnolia Society and other organizations. She was a member of Charlotte's St. Peter's Episcopal Church. Survivors, in addition to her niece, include a nephew, Warren Way of Orange, Texas."

Miss Lawrence avidly followed the progress of the NCSU Arboretum (now the JC Raulston Arboretum) development and was most excited with the things happening here. M. K. and Edith visited with her on numerous occasions and from her descriptions, they were able to track down the location of her Raleigh garden - today a fraternity house near the International House of Pancakes on Hillsborough Street. Though mostly a parking lot today, with a trampled bare-soil basketball court in the back yard - an amazing number of rare plants persisted from Miss Lawrence's days there - overtones of *The Secret Garden*. Edith and M. K. obtained permission from the present owners and carried out a plant rescue mission - so it is exciting to have a number of plants now growing on our garden, which came from the original *A Southern Garden*.

LESTER HAWKINS, 1915-1985

Over the years I had enjoyed reading articles in Pacific Horticulture by the superb plantsman Lester Hawkins about his travels to Mediterranean climate countries and about his own garden. Later, during my sabbatic year I first met him and discovered Western Hills Nursery as a wonderful source of rare plants (of which many are now scattered through the NCSU Arboretum (now the JC Raulston Arboretum)). Since then I have treasured the friendship of Lester and Marshall and our correspondence about plants back and forth. While in California last December, I visited him at his hospital - thin and weak from his long battle - but still looking to the future talking of more books to write, more mountains to backpack through and more plants to see, learn, and grow. His death was the loss of an important friend and mentor to me. The following warm tribute was published in Pacific Horticulture Magazine which had published so much of his work.

"Lester, my friend and partner for thirty-eight years, died on January 22 from a mysterious salmonella infection he had picked up traveling in Turkey eight months earlier. He was a man of continual surprises and the widest interests in music, architecture, painting, writing, and radical economics, as well as plants and landscaping. Lester was a journalist and occasionally undertook editing work on book manuscripts. One of these projects amounted to a total rewriting of a weighty work on economics. His horticultural interests began at the age of forty-five, worth mentioning because it underlines the accomplishments of his middle age and more important because it may offer encouragement to readers who feel they have too many years on them to start a garden.

We left our San Francisco apartment in 1959, finding a beautiful but wild three acres of land in Occidental. Like many people before and since, our vague intention was to establish the Old Organic Homestead, and the first few years were occupied not only in building with our own hands three houses, but in planing an orchard of fruit and nut trees and a properly mulched vegetable garden. Forced back to San Francisco to work, Lester there discovered and was entranced by the congested but magical plantings of Eric Walther at the Strybing Arboretum, and determined to have, in Edward Hyam's words, a "paradise garden" mounding, pulling out blackberries and poison oak, and the periodic scraping up of money to sustain us. The edible plants quietly disappeared.

His passion at that time was Australian and South African plants, to which we had been introduced by Ray Williams and which then seemed remote and exotic to us. An unfortunate consequence was devastation during the unusually cold weather of December 1972, when the thermometer dropped to 14°F., and a third of the garden was laid waste.

At about this time, Lester, who had been planning private gardens for a living, began a long and fruitful collaboration with a meticulous landscape contractor, Steve Brice, designing and supervising the planting of large-scale condominium and apartment complexes.

Though these activities were profitable and allowed us to subsidize our garden and small nursery, they involved long periods away from his own garden. It was only in the last few years that he was able to return to gardening and also to writing on garden topics. These were perhaps his happiest years. He traveled extensively and, in particular, came to think of Greece as a second home, and he had great pleasure with his camera and in writing essays. Last summer, when Beth Chatto visited us, I remember his remarking to her: "The plants have been good to us." And indeed they have. We had an agreeable way of making a modest income, a garden that was a refuge in what seemed an increasingly perilous world, and above all, through plants we gained many valued friends, who gave Lester affection in his health and sustained him through his illness." Marshall Olbrich

ARBORETUM NOTES: WINTER 1984-85 DAMAGE REPORT

After saying last year that we had the worst possible combination of conditions for cold injury to plants in North Carolina - within 15 months we experienced one - but two - more periods that were as bad if not worse. Dare I possibly say again that we should never see worse conditions in my lifetime than of the last two years? Yet each of three cold spells differed from each other. The Christmas 1983 freeze was characterized by being very early, very intense, and affecting unhardened plants that had received almost no previous cold temperatures to slow growth and prepare plants for winter. Plants normally hardy to much lower temperatures than were actually sustained were badly damaged. In January 1985, the plants were in better shape - had stopped growing and were hardened - but the intensity was greater than anything ever before encountered - in Raleigh breaking the 1897 record of -20°F and plunging on down to -90°F. We estimate that the arboretum was about -6 to -80°F. Throughout North Carolina new record lows were set that night - "the coldest night in recorded North Carolina history." This caused damage by dropping below the genetically controlled limit of hardiness. No matter how well hardened - there is a final limit of how low any given plant will take - and we dropped below many of them. We were lucky in a sense - that the weather had been mild before and the soil was warm, we had a fresh layer of fluffy snow that morning which acted as excellent insulation, and the spell only lasted a short time (roughly 36-54 hours). So a number of plants which normally might have been totally killed with a week at 50°F, were only killed back to the snow-line and sprouted back from the base. That Sunday morning as temperatures began to drop, I was out shoveling piles of bark around plant trunks and successfully saved such things as the Eucalyptus, Pittosporum, Laurus nobilis, and Xylosma which later sprouted back. The snow insulation effect was most dramatic in the lathhouse where green leaves of Pyracantha and Sambucus 1/2" down in the snow were totally uninjured and green when the snow melted - and all branches above the snow line were dead. Considering how low it got - I had expected far more damage than we actually had and by spring was relieved at how good things looked. The major losses (quantitatively speaking) from the January freeze were the Camellia japonica and sasanqua plants which screened the entrance to the garden; the large old evergreen Japanese oak, Quercus glauca, which sheltered and created the Secret Garden; the two specimen Ternstroemia gymnanthera plants in the Japanese Garden (our greatest loss in the garden this winter); and our Pyracantha and Lagerstroemia collections. Also in the city landscape - the death of Ligustrum japonicum and L. lucidum were major plant losses. Flower buds for the early spring things - Forsythia, Chaenomeles, Lonicera, Abeliophyllum, Magnolia, Prunus, etc. had begun to swell or were open and we lost virtually all the spring bloom as a result. And azalea buds, even though dormant, dropped below kill point for many cultivars.

The extreme cold took us into the temperature range on many plants where we could see the difference in genetic potential to tolerate cold among thousands of seedlings in the landscape population. *Cedrus deodara* was one of the best example with some 45' specimens with 3' diameter trunks being killed, other plants damaged but recovering - and others totally uninjured. Though *Ligustrum lucidum* was killed to the ground throughout North Carolina, I found one plant 15' in diameter in Davidson, North Carolina that tolerated an estimated -12 to -15oF with no injury at all while all others around it died to the ground. Such individual plants if noted are worth propagating for greater resistance in future cold periods, or for use in areas north of where the species is normally grown.

Then on April 10, the second punch of winter hit when I had about breathed a sigh of relief that we were "safe". You can usually check this by watching native woody species which have been selected for survival over thousands of years - when oaks, sweet gum, tulip tree, etc. are actively growing you can feel fairly confident. Most deciduous plants in the arboretum had broken dormancy and some had as much as a foot of new growth when we dropped to 23oF, the coldest temperature ever recorded in the month of April in Raleigh. Actively growing tissue can generally take some drop below 32oF, since tissues are not pure water - but only to about 27-30o for most things. The drop was severe enough to not only kill new leaves and flowers, but in many cases to damage limbs, and in a few cases such as *Styrax japonica* and *obassia*, *Glyptostrobus*, and *Acer palmatum* and *carpinifolia* to kill large plants completely. Even the native *Cornus florida* in full bloom had flower and foliage injury.

Because of the variety of injury methods and types, to record injury a special scale was developed and is used in the following listing. Plant size is given first in feet followed by rating scale.

1. Killed in January freeze
2. Killed to ground in January; resprout from base in spring
3. Over 80% branch kill in January
4. 50-80% branch kill in January
5. 20-50% branch kill in January
- 5A. 5-20% branch kill in January
6. No January injury, active growth at April freeze - plant killed
- 6A. No January injury, active growth at April freeze - killed to ground - resprouted
7. No January injury, active growth at April freeze - over 50% branch kill
8. No January injury, active growth at April freeze - 10-50% branch kill
9. No January injury, active growth at April freeze - no frost injury (even leaves)
10. No January injury, active growth - no plant injury

Because of the large number of cultivars involved, four groups which had major damage will be listed first separately. Two numbers follow each plant - the first is the size in feet of the plant in the arboretum and the second is the injury rating. Thus 3.0-4 means a 3 foot high plant had 50-80% branch kill from the January freeze.

Acer buergerianum cultivars Higasaymama 3.5 - 8A

Goshiki 4.0 - 9 Kamagata 2.0 - 8A

Maruba 4.0 - 9 Kamagata 4.08A

Mino Yatsubusa 2.0 - 9 Kiyohime 1.0 - 1

Miyasama 5.0-6A Mama 1.0 - 6

Naruto 3.0 - 9 Mama 4.0 - 8A

Moonfire 2.0 - 7

Acer japonicum cultivars Mrs. B 1.0 - 7

Mrs. B 5.0 - 8A

Aconitifolium 3.0 - 7 Murogawa 1.0 - 6

Aconitifolium 4.0 - 8 Nishiki Gawa 3.5 - 8

Green Cascade 2.0 - 8A Oregon Sunset 4.0 - 8A

Takinogawa 2.5 - 6 Orido Nishiki 4.0 - 8A

Ornatum 2.0 - 6

Acer palmatum cultivars Osakazuki 4.0 - 7

Oshio Beni 7.0 - 8

Aka Shigitatsu Sawa 3.0 - 6 Palmatifidum 2.0 - 1

Akaji Nishiki 2.5 - 7 Red Filigree Lace 1.5 - 8A

Akaji Nishiki 4.0 - 8A Sangokaku 2.0 - 9

Arakawa 3.0 - 8 Sangokaku 3.0 - 8

Bani Komachi 2.0 - 1 Sekimori 2.0 - 1

Beni Hime 1.0 - 9 Shindesojo 6.0 - 9

Bloodgood 3.0 - 7 Tamukeyama 3.5 - 8A

Bonfire 7.0 - 9 The Bishop 3.0 - 8A

Brilliant 3.0 - 8A The Bishop 6.0 - 8A

Buterfly 3.0 - 6 Trompenberg 4.0 - 8A

Dissectum Roseomarginatum 1.0 - 9 Trompenberg 7.0 - 8A

Dessectum Roseomarginatum 3.0 - 9 Tsuma Gaki 1.0 - 6

Everred 2.5 - 8 Versicolor 4.0 - 9

Everred 3.0 - 6 Viridis 2.0 - 9

Filigree Lace 2.0 - 8A Waka 4.0 - 7

Flavescens 1.5 - 6 Waterfall 1.5 - 6

Hamani Nishiki 2.0 - 6

Hamami Nishiki 4.0 - 1

Miscellaneous Taxa Dierama pulcherrimum - 10

Diospyros kaki 8.0 - 1

Abelia (all) 3.0 - 3 Diospyros lotus 5.0 - 1

Acer velutinum 4.0 - 6 Diospyros virginiana 25.0 - 9

Aesculus parvifolia 3.0 - 10 Distylium myricoides

Ailanthus giraldii 3.0 - 10 var. hangchowensis 2.0 - 1

Alnus japonica 3.0 - 10 Enkianthus campanulatus 4.0 - 9

Amorpha fruticosa 2.0 - 10 Enkianthus perulatus 3.0 - 9

Amorpha glabra 4.0 - 10 Eucommia ulmoides 18.0 - 10

Broussonetia kaempferi 9.0 - 2 Euonymus (all) - 10

Broussonetia papyrifera 2.0 - 2 Feijoa sellowian 2.0 - 2

Bumelia lycoides 2.0 - 2 Franklinia alatamaha 7.0 - 9

Buxus harlandii 2.0 - 3 Fraxinus (all) - 10

Buxus richardii 2.0 - 1 Glyptostrobus lineatus 5.0 - 10

Buxus sempervirens [various] 5.0 - 5 Glyptostrobus lineatus 14.0 - 6A

Callicarpa americana 6.0 - 2 Gordonia axillaris 3.0 - 1

Callicarpa americana Gordonia lasianthus 6.0 - 5

[white-fruited] 4.0 - 2 Gordonia lasianthus 8.0 - 1

Callicarpa bodinieri 6.0 - 2 Halesia parviflora 2.0 - 2

Callicarpa cathayana 7.0 - 2 Hamamelis (all) - 10

Callicarpa cichotoma 4.0 - 3 Hydrangea paniculata (all cvs.) 4.0 - 2

Callicarpa dichotoma 6.0 - 3 Ilex 'September Gem' 2.0 - 10

Callicarpa dichotoma 'Issai' 2.0 - 2 Ilex cassine (yellow-berried) 3.0 - 3

Callicarpa tosaensis 7.0 - 2 Ilex crenata 'Elfin' 0.3 - 10

Calycanthus floridus - 8A Ilex sugeroki 0.3 - 2

Camellia sasanqua 'Yuletide' 3.0 - 1 Ilex sugeroki 'Nakkahara' 0.5 - 10

Carpinus laxiflora 2.0 - 10 Ilex vomitoria 'Yellow Berry' 2.0 - 1

Catalpa ovata 4.0 - 10 Ilex vomitoria (all but 1) - 10

Cedrus deodara 'Aurea Pendula' 1.0 - 5 Illicium floridanum 4.0 - 10

Cedrus deodara 'Descanso Dwarf' 2.0 - 5 Itea virginiana 'Swarthmore' 2.0 - 10

Cephalotaxus sinensis 0.5 - 1 Juglans ailanthifolia .5 - 1

Chamaecyparis obtusa (all) - 10 Juniperus (all) - 10

Chamaecyparis pisifera (all) - 10 Kalopanax pictus 3.0 - 10

Chimonanthus praecox 8.0 - 4 Koelreuteria bipinnata 2.0 - 2

Clerodendron 2.0 - 2 Koelreuteria integrifolia 4.0 - 10

Clethra acuminata 3.0 - 10 Laburnocytisus adamii 8.09 - 9

Clethra alniolia var. tomentosa 3.0 - 3 Laburnum anagyroides 6.0 - 8A

Clethra barbinervis 3.0 - 6 Ligustrum japonicum 2.0 - 1

Clethra barbinervis 8.0 - 8 Lindera citriodora 4.0 - 1

Conradina verticillata 1.0 - 10 Liquidambar formosana 8.0 - 2

Cornus 'Eddies White Wonder' 14.0-9 Liquidambar orientalis 20.0 - 5

Cornus alba (all) 4.0 - 10 Litocarpus henryi 4.0 - 2

Cornus controversa 14.0 - 8A Lonicera henryi - 10

Corylus avellana 6.0 - 10 Magnolia sieboldii 3.0 - 8

Corylus colurna 14.0 - 10 Mahonia 'Arthur Menzies' 3.02

Cotinus (all) - 10 Metasequoia glyptostroboides 4.0 - 9A

Crataegus (all) 2.0 - 10 Nandina domestica (some) Defoliated - 10

Cryptomeria japonica 'Sekkan' 1.0 - 1 Nandina domestica (some) Defoliated - 5A

Cryptomeria japonica 'Sekkan' 8.0 - 5 Neviusia alabamensis 4.0 - 10

Cupressocyparis Parabenzoin trilobum 2.0 - 2

'Haggerston Grey' 20.0 - 5A Parthenocissus henryi - 2

Cupressocyparis 'Hyde Hall' 1.0 - 1 Paulownia kawakamii 1.0 - 2

Cyrilla parviflora 2.0 - 10 Phellodendron amurense 12.0 - 8A

Cyrilla parviflora 2.0 - 10 Picea omorika 2.0 - 10

Daphne odora 1.5 - 3 Pinus glabra 6.0 - 10

Deutzia gracilis Variegata 1.0 - 10 Pinus pinea 2.0 - 10

Pinus pinea 14.0 - 10 Lagerstroemia species, cultivars and hybrids

Pinus sylvestris (all) 6.0 - 10

Prunus mume (all but 1) 12.0 - 10 faurei 20.0 - 10

Prunus mume 'Kotenbai' 2.0 - 6 faurei 20.0 - 5

Pseudolarix amabilis 6.0 - 10 Bashams party Pink 7.0 - 4

Pterostyrax hispida 6.0 - 10 Baton Rouge 2.0 - 2

Punica granatum (all) 4.0 - 1 Bayou Marie 2.0 - 2

Pyrus parvifolia 12.0 - 10 Bourbon Street 1.0 - 2

Quercus suber 11.0 - 4 Catawba 6.0 - 2

Rhapiolepis indica Catawba 7.0 - 5

'White Enchantress' 1.5 - 2 Centennial 3.0 - 2

Rhododendron [az] 'Judge Solomon'

2.0 - 1 Cherokee 10.0 - 2

Rhododendron [az] 'Pink Ruffles'

2.0 - 4 Cherokee 11.0 - 1

Rhododendron [az] 'Pride of Mobile'

2.0 - 1 Conestoga 6.0 - 5

Sapium sebiferum 5.0 - 2 Dallas Red 13.0 - 5

Sarcococca ruscifolia 1.0 - 2 Delta Blush 1.5 - 2

Serissa foetida 'Variegata' 2.0 - 2 Dwarf Royalty 4.0 - 4

Staphylea colchica 4.0 - 10 Glendora White Bush 11.0 - 4

Styrax japonica 10.0 - 8 June marie 2.0 - 2

Styrax obassia 7.0 - 6 LaFayette 1.5 - 2

Taxodium mucronulatum 3.0 - 2 Low Flame 5.0 - 2

Thujopsis dolabrata 'Variegata'

2.0 - 10 Majestic Orchid 12.0 - 2

Trocodendron aralioides 4.0 - 8A Muskogee 15.0 - 5

Ungnadania speciosa 6.0 - 2 Near East 8.0 - 2

Viburnum odoratissima 7.0 - 2 New Orleans 1.5 - 2

Viburnum tinus 6.0 - 2 Peppermint Lace 6.0 - 3

Vitex agnus-castus, negundo 10.0 - 5 Petite Embers 2.5 - 2

Vitex agnus-castus, negundo 10.0 - 3 Petite Orchid 7.0 - 2

Vitex agnus-castus, negundo 10.0 - 2 Petite Pinkie 6.0 - 5

Vitex rotundifolia 4.0 - 2 Petite Red Imp 1.0 - 1

Zizypus jujuba 2.0 - 1 Pink Blush 2.0 - 2

Pink Ruffles 3.0 - 2

Seminole 6.0 - 3

Seminole 6.0 - 2

Snow Baby 3.0 - 2

Snow Lace 2.0 - 2

Tuscarora 11.0 - 4

Twilight 1.0 - 2

Victor 3.0 - 2

GROUND COVER NOTES - SUZANNE EDNEY

On my first visit to the Arboretum I can remember walking through the ground covers area and hoping that the next time I saw the garden some of the massive weeds would be pulled. Little did I ever expect to be asked to be caretaker of the area a year later. I now know why some large weeds were present on my first visit - the buggers do grow fast and depending on the time of day one is weeding (as the light will play tricks on the eye) even the most fastidious gardener can miss a juvenile, come back a week later and find to his horror the monster it has grown into. Talking about weeds reminds me of the few that would love to become legitimate ground covers at the Arboretum. Nut sedge is by far the most prolific and crabgrass is an ever-present pest. But my worst enemy is Bermuda Grass - the dickens to remove from a clump of *Liriope muscari*. Most of the weeds are controlled by using a pre-emergent herbicide in the beds applied in early spring and again in May. If I had to give one tip for maintaining a ground cover area it would be to suggest the use of a pre-emergent herbicide as these applications take care of about 80% of the weed seeds in a bed.

Much has had to be done to the few beds that have been replanted (about 1/4 of the area). Because of the drainage problem here the beds were raised and aerated by double-digging. If anyone would like to have some first hand experience at double-digging, I've schedule two work days this fall, October 26 and November 9 from 9 a.m. - 4 p.m.. We'll be ripping out the *Phalaris arundinacea picta*, Ribbon Grass, a beautiful grass for shade that loses its wonderful variegation in full sun. Bring a shovel, gloves and a good appetite as two fun filled days in the garden await you.

The Daylily collection was glorious this summer thanks to Ana Damaris Castillo - my very first helper in the ground covers this spring. And may thanks to the Arboretum crew, Newell, Paul and Larry, who have been so supportive and incredibly patient with me by taking care to prune the parterre and hedges as well as helping with the Wisteria trees which had to be "whacked" back at least six times over the summer. *Wisteria frutescens 'alba'* was especially tasty to the Japanese Beetles this summer. And on was home to a cocky Robin this spring (that was the ratty looking tree that was not pruned until mother had all the babies out). Also interestingly enough the drastic pruning the wisteria did tend to keep them blooming intermittently through early summer.

Invaluable support, encouragement and plants have come from many people. Donations from the outside were *Nierembergia repens rivularis*, White cupflower from Loleta Powell; *Thymus herba-barona*, Caraway Thyme from Bobby Wilder; *Potentilla 'Fire Dance'* from J. C. Taylor via Tony Avent and *Festuca ovina*, Sheep's fescue from John Hoffman. And transplants from Edith's perennial border and M. K.'s lath house have proven worthy ground covers. *Verbena tenusecta* was a beautiful 3-6" mat of finely dissected gray-green leaves with lavender flowers dancing above in just one month after planting six cuttings. In the perennial border Edith tell's me that it began blooming in February and has not stopped through the summer. From the lath house we tried *Veronica officinalis* which has filled in its assigned space very nicely. *V. officinalis* is also low, making a solid 1" high mat of olive-green leaves and producing 3" spikes of blue flowers in early summer.

Two of the most drought tolerant plants *Potentilla tridentata* and *Opuntia* sp. (Prickly Pear Cactus) have other outstanding qualities as well. *P. tridentata* when well-drained forms a thick evergreen low (2") mat and produces small white blooms through the summer. *Opuntia* sp. after being lifted with a spading fork rewarded us with luscious butter yellow blooms in the spring. It bloomed at the same time and made a lovely combination with the deep orange-yellow flowers of *Coreopsis auriculata*. These two in combination with *Vinca minor 'Variegata'* (yellow variegated leaves) is a smashing trio at the Arboretum. One of my favorite *Liriope muscari* is the cv. 'Sunproof'. As the cream and green leaves seem to bleach in the sun it produces the characteristic purple spike of bloom (around mid-July). I would like to see it used in a contemporary setting with cream colored pebbles as mulch and interwoven with a few drought tolerant purple and pink verbenas.

Baking summer sun with dry ground and periodic flooding (the difficult conditions in the ground cover area) are a challenge that I hope to meet. 'Friends', I know you will be patient with my trials and errors. If any of you have had particular luck with plants in conditions such as the ground cover area sharing your experiences would be most welcome.

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 mammoth 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 belong to *Euphorbia myrsinites*, a white and yellow cultivar of *Iris pumila*, *Potentilla villosa*, *Aurinia saxatilis*, *Anemone pulsatilla*, *Chrysogonum virginianum*, *Narcissus* and the '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 be 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 Lingard' and yellow daylilies compliment the flowers of the *Lythrum*.

Echinacea purpurea 'White Lustre's' white reflex-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 *Artemisia ludoviciana* var. *albula* 'Silver King', *Stachys byzantina* (Lamb's ears), and *Provsia artemesiodes*. The Russian sage's fall-blooming, lavender-blue flower spikes atop soft silver, finely-cut foliage complete this grouping.

Salvia superba 'East Friesland' blooms May to frost on compact 12" tall plants. Their medium purple spikes of flowers combine beautifully with the rounded form of *Coreopsis verticillata* 'Moonbeam' which flowers June to November, the June and July flowering red orange *Lychnis chalconica* and *Gaillardia* 'Burgundy' flowering from May to frost. Watch the 1985 border for *Lychnis chalconica* 'Alba' and the dwarf *Gaillardia* X 'Baby Cole' only 8" tall.

Aster X *Frikartii* 'Wonder of Staffa' flowered from late June to October bearing large 2" lavender "daisies". Combine this one with *Veronica spicata* 'Icicle' or the white flowered form of *Salvia farinacea*, the mealy cup sage.

Another perennial which bloomed June 1984 to January 1985 was the grey green foliaged *Linaria vulgaris*. Its flowers resemble tiny pale-yellow snapdragons. Be warned this 12" cutie is a plant which travels at a speed of about 45 miles per hour through the border. Currently it is parked in the space between *Yucca filamentosa* 'Variegata' "thug" looks quite refined.

Speaking of thugs, *Artemisia ludoviciana* var. *albula* is speeding through the bark mulch at a speed of at least 90 miles an hour. It is slated to be corralled in 5 gallon tubs sunk into the border to contain this traveling ways. The same technique is being employed with *Elymus arenarius* the exquisite blue lyme grass.

Two long flowering blue perennials are *Geranium* X 'Johnson's Blue' a compact bushy plant bearing large flowers May through June and the 5' tall *Salvia guaranitica*, bearing its spikes of blue flowers June to frost. The sage is shown off to advantage when backed by the white striped leaves of *Miscanthus sinensis* 'Variegatus'.

Though only flowering for the month of July, *Monarda didyma* 'Alba' created a lovely effect combined with *Heliopsis helianthoides* and the variegated *Miscanthus*. *Penstemon smallii* is long flowering for us. It begins to bear its lavender and white trumpets in late May. New flowers continue to be produced if the faded flowers are removed. It is lovely planted with the purple leaved sage *Salvia officinalis* 'Purpurea', *Dianthus* X 'Lavender Lace' and the 3-4" yellow flowers of *Oenothera missouriensis*.

Last fall the plants from the east 110 feet of the border were dug up and potted while this section of the border was plowed and fumigated to correct drainage problems and to discourage weeds. A trench was added along the front of this section of divert run-off water from the turf grass plots. This has helped the appearance of this section enormously and it is quite refreshing not to have to retrieve perennials from the conifer collection "downstream". Meanwhile this section of the border was redesigned, replanted and mulched this spring. All the work that has taken place in the border has been facilitated by the help of Pat Sprunt, Edith Horne, Pete Hoehne, Jewell Seymour, William Barrett, M. K. Ramm, Suzanne Edney, Larry Hatch, Bob Wilder, Jayne Grace, Rhonda Wilcox, Waltraud Bastia, Frances Shamohouse and our own wonderful Newell Hancock.

Winter in a perennial border is normally a dull time even with the seed heads of *Rudbeckia* 'Goldsturm', *Sedum* X 'Autumn Joy' and the dried foliage and inflorescences of the ornamental grasses in evidence. In late December the grasses received a flashy new look. The color scheme of the planting design was followed strictly. Soft yellow, baby blue, lavender, dusty rose, baby pink and purple grasses of the border's west end gave way to the brilliant reds, neon oranges, and royal blues of the central area. Cyndi Lauper, eat your heart out!

Coming this spring to the border is the Jekyll Pot, a large pottery urn by English potter mark Hewitt, which will grace the center of the border. Its name refers to Gertrude Jekyll, whose studies of the forms, textures and colors of plants inspired the design of this border.

Woody additions to the 1985 border include four cultivars of the blue-flowered *Caryopteris*, pink-flowered *Elsholtzia stauntonii*, pink-flowered *Hibiscus grandiflora*, red-flowered *H. coccinea* and *H. X 'Lord Baltimore'*, several buddleias and the rose-purple *Lespedeza thunbergii*. Two cultivars of Japanese maple visited the border briefly and then moved on to a more hospitable environment.

Annuals are also used in the border. Favorites in 1984 were the purple-leaved castor bean, *Ricinus communis*, and *Perilla frutescens 'Atropurpurea'*. These were joined by white-, pink-, and red-flowered snapdragons which wintered over successfully. *Cleome Hasslerana*, *Nierembergia X 'Royal Robe'* and white and purple *Lobularia maritima* also added season color.

Herbaceous additions to look forward to include a collection of oriental poppy cultivars which should look absolutely glorious for the "thirty minutes" they are in bloom. *Gaura lindheimeri*, a native of the southwest United States, will eventually grow to 6' in height bearing a succession of small white flowers on upright spikey stems from May to frost. October and November will be brightened by the brilliant red flowers of *Schizostylis coccinea* *A. grandiflorus* and *A. spectabilis*, both lavender-flowered will make October a month to anticipate. The red stems and bracts of *Euphorbia griffithii 'Fire Glow'* will bring a touch of warm color into the border from late May through June. These are only a few of the new additions to the border. Come out and see the others.

Many of our new plants have been contributed by the following generous people: Bob Wilder, Elizabeth Lawrence, Norman Beal, Pam Harper, Dot Spengler, M. K. Ramm, Mark and Andre Viette, Kurt Bluemel, Daryl Apps, Mrs. Rachel Dunham, Allen Bush, Harry Phillips, Jim Ward, Rob Gardner, Jim Massey, Kate and Fairman Jayne, Lynn Raker, Kendal Brown, Curtis Brooks, Larry Hatch, Dot Wilbur, Phil Normandy and Becca Zinn. Thanks.

Sketch of the new NCSU Arboretum (now the JC Raulston Arboretum) gazebo in the entrance "White Courtyard Garden". The gazebo was donated by the North Carolina Association of Nurserymen and installed by Curtis Brooks (who sited it, poured the foundation, painted it - agony, and coordinated the assembly by volunteer helpers: Will and Suzanne Hooker, Mercer Bonner, Pete Gromley (who did the sketch later), Jeff Amtmann and Tony. Many thanks to all.

KOREAN EXPEDITION

Thanks to the extensive and widespread support from the North Carolina Associations of Landscape Architects, Contractors and Nurserymen; Friends of NCSU Arboretum (now the JC Raulston Arboretum), and NCSU; full funding to participate in the 1985 expedition was received. As you read this newsletter, I will be in Korea collecting seed. (Whoops - I have returned!) This is the first time a S.E.U.S. institution has been involved in such a program for ornamental germplasm. It is also the first time such widespread support has come from many state industry sources and individuals rather than a grant from a single major institution. Your support is most sincerely appreciated.

Following the sequence set forth in the U.S. National Arboretum 1983 proposal Plant Exploration in the Republic of Korea, the 1985 segment of exploration is planned for the southwest coast and islands. This segment is proposed to cover the area from Pyonsan Peninsula (36° N lat.) south to Wando (34° 20' N. lat.), including hilly regions near the coast, Naejang Mountain just inland, and several offshore islands and island groups. Collecting site elevations range from sea level to 764 meters.

The southwest coast and islands, like the northwest region, have scarcely been touched by plant explorers. The many offshore islands, which are the peaks of mountains long submerged by the continuing westward tilt of the Korean peninsula, retain isolated relict populations of species which have persisted while similar populations on the mainland have been decimated by glaciation and human activity. This is especially true in the case of broadleaf evergreens and plants such as *Daphne genkwa* once common along the mainland coast but now very scarce or absent. As in the northwest islands, distinctive genotypes have developed through long periods of isolation and inbreeding.

Although the flora of the southwest coast and islands, like the native flora throughout Korea, is under great pressure from human activities, it is in better condition than that of the northwest coast and islands. In most cases, seed collection will be emphasized over vegetative material in 1985. The 1985 exploration will be organized as a single trip extending from August 1, 1985 to October 31, 1985.

Seed will be collected of targeted landscape plants from as many distinct provenances and populations as possible. Populations over the entire range of the target areas will be surveyed and the 1985 team will return to outstanding areas as the expedition progresses for more intensive collecting. Superior populations will be identified and collected in the wild to increase the germplasm base for present and future hybridization and selection. Species now scarcely known in cultivation which possess potential to become important additions to the landscape will also be collected. All notes detailing specific habitat, characteristics and plant features. In addition the full range of the native flora in the target areas will be documented with herbarium specimens. Material from these areas are scarcely represented in any Western herbaria. Seoul National University will benefit from a set of herbarium specimens deposited there to advance their taxonomy program.

The Proposed Primary Target Locations for 1985 (see map)

1. Pyonsan Peninsula: A hilly Peninsula jutting in the Yellow Sea, maximum altitude 500 meters. This is probably the least disturbed coastal site on the west coast of Korea with a broad range of useful species, including almost all those listed as target species below.

2. Uido: This island off the Pyonsan Peninsula, altitude to 255 meters, retains an extensive population of *Daphne genkwa* thriving under greatly stressed conditions.
3. Naejang Mountain: A mountain near the coast, elevation to 764 meters preserved as a national park. A wide range of landscape species, including the hardiest populations of *Daphniphyllum macropodum* in Korea.
4. Mokpo: The only native stand of the endemic *Albizia coreana*, a distinctive white-flowered species of interest for hybridization. Altitude to 200 meters.
5. Huksan Island Group: A national park consisting of several mountainous islands (elevation to 620 meters) in the Yellow Sea. Long-isolated populations of *Ilex* and many other broadleaf evergreens, including the endemic *Osmanthus insularis*.
6. Chindo and nearby islands: Poorly-known isolated populations of broadleaf evergreens and other plants such as *Torreya nucifera*. Altitude to 485 meters.
7. Wando and nearby islands: Many broadleaf evergreens, especially species of *Ilex*. Only recorded site of the very ornamental *Ilex X wandoensis*. Populations of the poorly-known *Cephalotaxus coreana*. Altitude to 644 meters.

Target Species for 1985 Include

1. *Ilex* species, including *I. integra*, *I. cornuta*, *I. macropoda*, and *I. crenata*, plus the hybrid *I. wandoensis*. In addition to the need for new germplasm for evaluation and breeding for landscape use, there are several interesting taxonomic questions to be resolved among the Korean species, such as the status of *Ilex macropoda* f. *pseudomacropoda* and the natural hybrid *Ilex X wandoensis*.
2. Broadleaf evergreen species as new germplasm sources and in some cases potential sources of increased hardiness: *Distylium racemosum*, *Pittosporum tobira*, *Daphniphyllum macropodum*, *Ligustrum japonicum*, *Rhaphiolepis umbellata*, *Neolitsea sericea*, *Mahilus (Persea) thunbergii*, *Aucuba japonica*, *Quercus* (several evergreen species), *Osmanthus insularis*.
3. *Viburnum* species, especially *V. bitchuense* and *V. erosum*, as new germplasm sources from insular populations. *Viburnum awabuki* and *V. carlesii* may be encountered.
4. Species not now in general cultivation with potential as landscape plants: *Albizia corneana*, *Cephalotaxus coreana*, *Meliosma oldhamii*, *Torreya nucifera*.
5. New germplasm for tree and shrub hybridization programs: *Prunus serrulata* var. *spontanea*, *P. japonica*, *Celtis* species, *Acer* mono -- maritime populations, *Malus* species, *Pyrus* species, *Styrax japonica* - maritime populations, *Rhododendron mucronalutam*.
6. *Daphne genkwa*: Various color forms showing vigor and hardiness in highly stresses situations.

ORGANIZATION FOR 1985

The 1985 field team will include two staff members from the U.S. National Arboretum: Barry R. Yinger, Curator of Asian Collections; and Dr. Theodore R. Dudley, Research Botanist, Dr. J. C. Raulston of NCSU and Mr. Peter Wharton of the University of British Columbia. There will also be a Korean team member to help with local logistics in the field (field assistant).

Cooperation with Seoul National University will continue and the aid of the American Embassy in Seoul and the Korean Ministry of Defense will again be solicited. The southwest coast and islands are not as sensitive as the northwest coast and islands, but some areas, such as the Pyonsan Peninsula, are heavily garrisoned and require the cooperation of Korean armed forces. We greatly benefited from the support of the Korean Ministry of Defense in 1984.

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Most members who comprise the Friends of the NCSU Arboretum (now the JC Raulston Arboretum) are not in the professional nursery/landscape trade, but are serious gardeners or people who want to support the continuation of the arboretum as a state resource. Beyond the arboretum use as a teaching resource and display garden for the public, there is also the very important outreach to the commercial industry. Each year plants are taken to the North Carolina Association of Nurserymen's meeting for display and thousands of plants are also propagated for distribution to the nurserymen as an incentive to try growing some new crops. To let members have a feel for this outreach, I am including here the information distributed at the 1985 meeting.

1985 NCSU Arboretum (now the JC Raulston Arboretum) PLANT DISPLAY

NCAN Short Course and Trade Fair - Asheville, NC - August 25-27

Dr. J. C. Raulston

In the year since the last Asheville NCAN Short Course, nearly 600 different new plants have been added to the collections of the NCSU Arboretum (now the JC Raulston Arboretum). The collections currently hold about 4,000-4,300 different ornamental plants. The plants on display represent some of the diversity of plants acquired in the past year.

Acer palmatum 'Red Filigree Lace' - One of the newest and choices cultivars of the popular Japanese maple and possibly the most delicately cut leafed one. Five years ago plants sold for \$2,000 apiece but this form grows very rapidly despite its reduced leaf area and grafts easily with the result that the plant can now be obtained for \$20 per graft and in several years should be no more expensive than "common" cultivars. Should become very popular very quickly.

Acer pentaphyllum - A very rare species of maple first brought from China in 1929. Limited in availability due to lack of seed-producing plants in the U.S. A small tree with fine bright yellow fall color. Said by some to be fairly tender but the German authority Krussman states hardy to zone 6 -- and he is very rarely wrong. Seed grown.

Agapanthus orientalis 'Stripes' - *Agapanthus* has proved to be dependably hardy in Raleigh and needs greater use in the landscape for its white and blue flowers produced in mid-summer. For those in colder areas, *agapanthus* are great potted plants to overwinter indoors and put out in the garden for summer color. Last year we brought a number of named cultivars from England for trial. Six years ago I saw one plant of a variegated *Agapanthus* plant at Wisley and had hunted it ever since, finally finding this one at a rare-plant dealer's garden in California last December. It's exciting to finally have this very choice plant. It will likely be less hardy than the species so we will keep some divisions in the greenhouse until we know more.

Ardisia japonica 'Hakuokan' - One of a series of cultivars of this fine Japanese groundcover plant introduced to the U.S. by Barry Yinger several years ago. They vary from solid green through yellow and white variegations, and some with cut leaves. They grow 2-10" tall and spread by underground runners. They die to the ground at about

15°F but seem quite root hardy at least in the Piedmont. Easily propagated by cuttings. They also make excellent houseplant foliage plants. On this year's distribution list.

Azalea 'Silver Sword' - One of the handsomest variegated azaleas I've seen. A sport of 'Girard's Rose' cultivar which has rose-colored flowers. Coming from a breeding program in Ohio it is completely hardy throughout North Carolina. Easily propagated from cuttings.

Cercis mexicana - One of the most exciting plants from our '85 "Texas Collection" -- this rare species of redbud from Mexico is possibly the most beautiful of the *Cercis*. In the landscape it has the dark green glossy foliage typical of the Texas redbud (and is sometimes listed as *Cercis reniformis* var. *mexicana*) and in addition has the beautiful undulate leaf margin. Tests will be necessary to determine its hardiness but since it grows well in Dallas it should be an excellent plant for at least the eastern half of North Carolina. We now have 7 of the 8 existing *Cercis* species (missing *C. griffithii* from Afghanistan -- but I've found a plant in Europe and am eyeing it for scion wood!) in our collection.

Cercis reniformis -- genetic dwarf - Only Raulston and three other plant crazies in the world could live this plant -- but it is one of my favorite plant treasures. This spring we grew a population of *C. reniformis* seedlings and as the seedlings took off this one got left behind. Its siblings are now 2-3' tall with 4-5" diameter leaves and will soon be used as budding understock. Look closely and note the tiny leaves and dense branching pattern (Reader Note: Now 2" tall, leaves 1/4" diameter at most). It will take many years to reach a foot in height and will probably be impossible to propagate -- isn't it magnificent!!

Chamaecyparis obtusa 'Juniperoides' -- A wonderful, very slow growing cultivar of the dwarf Hinoki cypress originated in 1923. This plant is about six years old. Propagated by cuttings with slow rooting. It is doubtful if these can be grown and sold profitably -- but what a magnificent plant to have in the rockery of a garden!

Cladrastis kentuckea 'Rosea' - This plant is a graft of the true pink-flowered form of the North Carolina yellowwood tree. We had seedlings growing from a pink tree but they likely will not come true to color -- so it was nice to get this plant from a collection just a month ago.

Cornus alternifolia 'Variegata' - A plant brought from England in June. This variegated form of our native North Carolina dogwood species is considered one of the finest variegated shrubs for the garden. I have seen it to 15' in size in England. Propagated by grafting which must be somewhat tricky as it was one of the most expensive plants of the 45 I obtained this year in England (but still reasonable in U.S. terms -- at about \$18).

Corylopsis willmottiae 'Spring Purple' -- One our plants brought from Hillier's Nursery in England this summer. the *Corylopsis* are deciduous shrubs with dangling racemes of yellow flowers very early in spring. This cultivar is noted for having purple foliage on new growth in early spring. *Corylopsis* have done well in our plantings and we now have 7 of the 9 species. Propagated easily from summer cuttings under mist -- but like maples, dogwoods, and witch hazel -- winter losses are high the first winter if cuttings are root disturbed or do not get a flash of growth before dormancy.

Crataegus monogyna 'Flexuosa' -- A slow growing form of the common English hawthorn having twisted corkscrew branches. Supposedly rather difficult to graft successfully and rare in commercial trade -- I've only seen them for sale in central California. Old plants at a size of 3-4' in diameter are magnificent and highly prized by bonsai enthusiasts.

Enkianthus campanulatus var. *palibinii* -- One of our plants from the '85 England importation. This variety is distinguished from the species and is noted for its rich deep red colored flowers. Hardy throughout North Carolina -- a beautiful deciduous shrub with excellent fall color and bells of flowers in spring. Reaches 6-8' in height. We now have 6 of the 10 species. Propagated by semi-hardwood cuttings in early summer.

Gardenia jasminoides 'Variegata' -- A rare and showy cultivar of gardenia suited only for the warmest coastal areas of North Carolina - but having possible value as a greenhouse pot/foilage plant for interior sales. EAsy from cuttings and fast growing at high temperature.

Hamamelis X intermedia 'Diane' -- A red-flowered witch hazel, one of 20 cultivars now in the arboretum collections. No one propagates cultivar witch hazels in North Carolina and I can't seem to get anyone started in growing these magnificent plants which flower in January-February. Abundant seedlings now appear under our older plants -- last year we pulled and potted these seedlings in 1 1/4" pots (and gave away as a NCAN distribution) in early summer. By fall they were 6-15" tall. They were overwintered and brought into the greenhouse in February and started into growth. As understock buds swelled -- 1-2" scions of named cultivars were either cleft or side-veener grafted on the seedlings. This plant on display is one that resulted (some other plants were twice as large but not displayed because Japanese beetle eaten). It is a fast, early, highly profitable crop with unlimited market potential. Won't somebody please start producing these so I can stop ordering them all the way from New Zealand!

Hibiscus syriacus 'Meehanii' -- A variegated foliage form of the common Rose of Sharon seen throughout North Carolina. Easily propagated from softwood cuttings.

Ilex aquifolium 'Flavescens' -- A golden-foliaged form of the English holly. English holly is not dependably hardy in western North Carolina, and in the Piedmont is best where it has light shade and a consistent good supply of moisture is essential. They are not drought-tolerant. Propagated by cuttings.

Illicium floridamum 'Album' -- A rare white-flowered form of this purple-flowered evergreen shrub native to the southeastern U.S. Surprisingly hardy for a deep South species and showed no injury in Raleigh at -9oF. Propagates easily from cuttings at most times of the year.

Lonicera albiflora var. *albiflora* - A rare native Texas shrub which has never entered the commercial nursery trade and is not even listed in the European references. It becomes a woody shrub with time (though it appears vining now) reaching 6-8'. In spring it has attractive pure white flowers nestled in perfoliate leaves in a showy display. EAsily propagated by cuttings and should do well at least the eastern two-thirds of North Carolina.

Machilus thunbergii -- An evergreen tree from Japan -- most notable to me in that none of my many reference books even list it. Obtained from Brookside Gardens as one of their many recent introductions from Japan.

Magnolia X soulangiana 'Sundew' -- Our already excellent collection of magnolias continues to grow with some 32 new additions this year bringing the collection to over 100 species and cultivars. 'Sundew' was obtained from Gosslers Nursery in Oregon - the best source of a wide variety of magnolia species and cultivars in the U.S. It is a Pickard Series hybrid with large creamy white flowers that are flushed pink on the outside of each tepal.

"Mahodina" (or possibly "Nanhonia") - This new plant was recently obtained from the originator in Oregon and is supposedly a bigeneric cross of *Mahonia X Nandina* -- theoretically possible as both are in the *Berberidaceae* family. Not more than a dozen plants in existence and we have essentially everything to learn about this fascinating mystery plant.

Microstrobis fitzgeraldii - An extremely rare conifer -- "usually only found at the foot of waterfalls in the Blue Mountains of New South Wales, Australia." Though Harrison and Harrison rate it hardy equal to some other conifers which can be grown in Raleigh, I doubt that we can successfully grow it outdoors. But kept as a part of our very fine collection of rare and exotic conifer genera. Easily propagated by cuttings.

Nandina domestica 'San Gabriel' - A new cultivar of this excellent broad-leafed evergreen plant recently coming into the California market. Makes a beautiful lacy specimen probably reaching 2-3' in height. Propagated by cuttings under mist. Excellent commercial potential.

Osmanthus heterophyllus 'Purpureus' - _An attractive, purple foliage colored form of this common plant grown through much of North Carolina. The color is best in full sun and at its best in winter and early spring. Fragrant flowers in autumn. EAsily propagated by cuttings.

Phillyrea angustifolia - A handsome small evergreen shrub closely related to *Osmanthus*. Has small, fragrant, creamy-yellow flowers in May-June. Form North Africa and Southern Europe and probably hardy only in Piedmont and Coastal North Carolina. Reported very tolerant for seaside plantings so a potential new beach area plant. Easily rooted from cuttings.

Pinus thunbergiana 'Nana' - One of the dwarf forms of the Japanese black pine growing only 1/2-1"/year. Produced by grafting on black pine seedlings. Again not a "commercially" viable crop -- but a choice collectors item.

Platanus cashmerana - A rare species of Sycamore obtained from a Texas research program on evaluation of various *Platanus* species and hybrids for resistance to anthracnose disease. Not mentioned or discussed in any of my references. Often plants from northern India are not hardy but it has withstood the hardest winters Dallas can offer so should be dependable in all but the extreme mountain areas of North Carolina. Easily propagated by cuttings and fast growing but nothing known yet on ultimate size and disease resistance.

Prunus mume -- the Japanese Apricot - Another of my "long-promoted, never grown" plants with showy white, pink and red flowers in January-February (in Raleigh). This year plants were in full bloom the day we dropped to -9oF at night and there was no twig injury or die-back as a result of the early bud activity. Last year our trees set an abundant seed crop which we harvested in summer, stratified and sowed this spring. The 4 1/2' plant on display represents one season's growth from seed (so far -- it will add another foot by winter). Cultivars root well from semi-hardwood cuttings in early summer; and seedlings also make excellent landscape plants. A superb plant for North Carolina -- 7 years of yelling so far to no avail -- some please grow this plant.

Rhamnus frangula 'Asplenifolia' - A narrow leafed form of the alder buckthorn native to Europe. Becomes a large shrub to 15' and useful for its lacy foliage effect. Has yellow fall color and red fruits eventually becoming black. An excellent plant for western North Carolina. Produced by semi-hardwood cuttings in early summer under mist.

Rhododendron occidentale - The western U.S. equivalent to our southeastern deciduous azaleas. Large white to pink fragrant flowers in spring. Considered impossible to grow successfully in the east and no one quite knows why. I've never kept one alive over a year. At the American Rhododendron Society meeting last year and a grower stated it was due to high need for Magnesium and that growers should use large quantities of dolomitic limestone (1-3#/mature plant/year!!) to keep them alive. We are experimenting with a few seedlings to see if this has any validity. Seed grown.

Rhus chinensis 'September Glory' - A species native in the Orient from Malaysia to Manchuria and cultivated in Europe since 1784. It forms a handsome small tree to 20' with large yellowish-white panicles of flowers in late summer. A tough plant with excellent potential for difficult inner city sites, yet without the suckering and short-life often associated with Sumacs. This cultivar selected for outstanding autumn foliage color - propagated by root cuttings.

Rosa spinosissima 'Petite Pink' - The first and only rose I've ever recommended for commercial production. It was discovered growing in a 1750's garden of a plantation home on the Cape Fear River near Wilmington, NC. The foliage is evergreen to 10oF -- is handsome with delicately cut dark green, glossy foliage, grows rapidly into a dense compact plant to 2-3'. I feel it has great potential for mass commercial plantings as a medium height groundcover -- finally something for sunny sites as an alternative to junipers. It literally roots as easy and fast as coleus -- I've estimated under greenhouse conditions one could go from 1 plant to 1,500 in one year's time with repropagations. A distribution plant this year -- available in quantity from The Antique Rose Emporium, Route 5, Box 143, Brehnam, TX 77833 (409-836-9051) - Catalog \$2. One of 20 old historic roses added to the arboretum collections this year.

Rosa rubrifolia -- the Red-Leafed Rose - One of 20 wild species of rose obtained for planting out as shrubs without the spraying/pruning routine needed with hybrid teas. This species is one of the best for colored foliage effects in the landscape with purple foliage in the sun, large clear pink flowers, and red fruit in fall. Native to central Europe and propagated by seed or softwood cuttings.

Salix gracilistyla 'VAriegata' - A variegated form of the "dwarf pussy willow" we distributed several years ago. The only variegated willow I know of, and an excellent plant with catkins twice as large as the normal pussy willow grown in the nursery trade and which appear several weeks earlier. The variegation only appears on strong young shoots growing in the sun. Plants should be cut back annually to force best foliage color. Easy from cuttings.

Salix magnifica - The largest leaf of any willow species and spectacular catkins up to 8" in length characterize this species discovered by Wilson in western China in 1909. It grows to 15' in height and is best on moist, wind protected sites. Best from cuttings in early summer. Often mistaken for a magnolia.

X Stranvinia 'Redstart' - A most interesting bigeneric hybrid recently obtained in England. A hybrid of *Photinia* X *Stranvaesia*. It is an evergreen shrub growing probably 10-15' in height and has red new growth in the spring. As a landscape plant it should behave much like Red Tip *Photinia* with smaller, more narrow leaves for a finer texture. It should be hardy throughout North Carolina except for extreme mountain areas. Propagates easily from stem cuttings.

Styrax texana - An extremely rare tree on the U.S. Endangered Species List with supposedly less than 30 trees still existing in the wild in Texas. Several cuttings were obtained from a Texas experiment station working with rare plants and we now have three young plants growing. A typical *Styrax* with white flowers on a small tree that is quite ornamental. Will be hardy in Piedmont; unknown in mountains. Easy from cuttings.

Thuja occidentalis 'Sherwood Forest' - A new variegated cultivar of the commonly grown American arborvitae -- obtained from Mitsch Nursery in Oregon. Received as cuttings just this spring and has been very vigorous and fast growing. Adaptable to all of North Carolina. Propagated by cuttings.

Yucca 'Blue Boy' - One of 16 new species and cultivars of *Yucca* and *Agave* obtained from California this year. Dozens of species have never been evaluated for hardiness or tolerance to Eastern U.S. conditions and as our plants get more size on them we will be planting them out. No information is available on the origin of 'Blue Boy' but the plants seen in California are among the most beautiful *Yuccas* I've ever seen. Somehow it "looks" hardy to about 20oF on a gut feeling -- time will tell.

Xanthoceras sorbifolium - A very hardy small tree from northern China introduced into cultivation in 1866. It has panicles of showy white flowers with a carmine eye in early summer. Though tough and showy, a rare plant in cultivation even among botanic gardens. Produced from seed -- which is virtually unobtainable.

1985 NCSU Arboretum (now the JC Raulston Arboretum) PLANT DISTRIBUTIONS

Each year a selection of plants from the NCSU Arboretum (now the JC Raulston Arboretum) is made for propagation and distribution to North Carolina nurserymen at the summer short course as a means of spreading new or uncommon plants through the state for further observation and perhaps potential commercial production. Selection of plants is based on ability to be propagated in midsummer when the Department of Horticulture propagation benches are empty, size of plants adequate to allow taking of 200-300 cuttings, and absence in the existing commercial industry. Plants will vary in commercial potential with some having great potential - others merely curiosities or hobbyist collector-type items. These plants provided for growers represent just a sample of the 4,000+ species and cultivars presently growing in the NCSU Arboretum (now the JC Raulston Arboretum). Commercial growers are most welcome at any time to come to the arboretum to collect propagation material to provide stock plants for their operations. We do request that an appointment be made to coordinate which materials will be collected. Dozens of growers now receive many thousands of cuttings annually from this source. Plants should be potted in quarts or gallons, winter protected the first year, and to prevent losses grown to some size before planting out.

1. *Ardisia japonica* (Myrsinaceae). An excellent low-growing (3-9") semi-evergreen groundcover from Japan for shady areas. Several years ago Barry Yinger introduced this series of cultivars into the United States; we obtained them from Brookside Gardens in 1984 and have been building numbers of plants since to release to the nursery trade. They spread by underground runners and can be propagated by division of clumps or will root easily from shoot tip cuttings at any time of year. They are best in light shade on well-drained moist soil and would be excellent companion plants for azaleas and rhododendrons. The tops die to the ground at about 15oF but with mulching the plants are hardy to Washington, D.C. They should be useful to all areas of North Carolina except the extreme mountains. They also make excellent house plants and the few mail order collector greenhouses that have a cultivar or two sell them for \$2-4 per rooted cutting. Plant numbers can be built at a moderate rate - faster than pachysandra, slower than English ivy - and they should have excellent commercial potential. Because we do not yet have 200 plants of one cultivar for release - we are including in each bag only one of the following cultivars. Others will be available upon request in the future.

1A. 'Beniyuki' - leaves irregularly shaped and notched - wide bands (more than 1/2" wide) of white on edges.

1B. 'Chiyoda' - leaves irregularly shaped notched - thin bands (less than 1/4" wide) of white on edges.

1C. 'Hakuokan' - a large and vigorous plant with broad band of yellow variegation in the center of leaves.

1D. 'Hinode' - a large and vigorous plant with broad band of yellow variegation in the center of leaves.

1E. 'Hinotsukasa' - irregular rounded "teeth" on margins of leaf. Main blade green but "teeth" often (not always) white. From distance has a "dotted" look.

1F. 'Ito-Fukurin' - an elegant, subtle cultivar - light silvery-grey leaves with a very thin margin of white outlining each leaf.

2. *Calluna vulgaris* 'Foxhollow' (Ericaceae) - Heather. One of hundreds of cultivars of the famous heather native to Northern Europe. Often stated that it will not grow in North Carolina - but I know of successful plantings in the coastal plants (with raised beds for drainage) and all the way to some upper mountain gardens. We have had excellent luck with them in both sun and shade in the raised, bark-filled beds of our lath house garden in Raleigh. Callunas (heather) flower in summer months and Ericas (heath) in the winter months with white, pink, rose and purple flowers - it is possible to have some type of heath or heather in bloom almost any time of year. Provide moist, well-drained acid soils with little nutrition for best culture (similar to rhododendron culture - excellent companion plants). They do die easily and unexpectedly - but they do that everywhere and one just accepts that for the pleasure of having them. I figure on 20-25% loss per year or about a 4-5 year rotation. But they propagate so easily from cuttings, and grow so fast it is always easy to have a replacement crop coming on. Non-flowering shoots can be rooted under mist most any time of year.

3. *Chamaecyparis obtusa* 'Sanderi' (Cupressaceae). A beautiful slow growing conifer introduced from Japan in 1984 and for many years considered to be a juniper - even today often confused with another conifer incorrectly called 'Sander'. Foliage is light sea-green in summer and develops a purplish-cast in the winter. Hillier's Manual says it is tender but in full open exposure at -9oF we had no injury at all. It should be adaptable throughout North Carolina. Relatively easy to propagate from winter cuttings under mist - we get 80-90% - but a bit slow. Probably a marginal crop for profitable nursery culture with its slow growth - but a handsome, dense plant in the garden with beautiful form and color. The true 'Sander' has only one type of foliage (sharp or juvenile). The erroneous 'Sander' has two or three types of foliage and should be called 'Chabo-yadori'.

4. *Cornus sericea* var. *flaviramea* (Cornaceae) - the "yellow-twig dogwood". A very commonly grown shrub in the northern U.S. and Europe used to add bright color to the winter landscape. The showy yellow branches are very effective against snow or a dark background. Color is best on young vigorous shoots so it should be cut to the ground every few years, and needs to be in full sun for best color. It grows to 6' in height, has white flowers in early summer and white berry-like fruits in winter. Very easy to propagate - either from dormant hardwood cuttings under mist in summer. We produced 400 plants this year from January cuttings off our one 2-year old plant -- and had we later taken softwood cuttings we could have easily had 1,200. Rarely seen or produced in North Carolina and needs much greater use - particularly in the western half.

5. *Corylopsis pauciflora* (Hamamelidaceae). A deciduous shrub introduced from Japan in 1862 with drooping racemes of showy primrose-yellow flowers very early in spring. The smallest foliage of any of the ten species of *Corylopsis* and perhaps the finest as a garden plant. A densely branched plant normally seen 4-5' in height and as wide but it may get larger. Best in partially shaded areas with moist well-drained soils similar to azalea cultural requirements. Hardy and useful throughout North Carolina. Easily rooted from semi-hardwood cuttings in summer under mist but suffers the establishment problems of other Hamamelidaceae after rooting - see notes under *Fothergilla* (#7 on list) for further details.

6. *Cunninghamia konishii* (Taxodiaceae). The Chinese Fir, *C. lanceolata*, is a fairly common plant in the S.E.U.S. - apparently rather popular some 30-50 years ago when the large plants seen today were planted. It is less common in nurseries today. *C. konishii* is a rare species from Taiwan introduced to cultivation in 1910 and extremely uncommon even in botanic gardens (I've yet to note it in all my travels). We grew our plant from seed obtained from Taiwan and did not expect it to be hardy as Hillier's Manual says it is very tender in England. But like many species from S.E. China and the S.E.U.S., the lack of enough heat to ripen wood is apparently their problem as it has never been injured with us and survived this winter at -9oF. It differs from *C. lanceolata* in having smaller leaves and cones. We took 500 cuttings in midwinter and they rooted 100% with large root balls when we potted them this spring. A problem with rooted cuttings (also true with *C. lanceolata* 'Glaucua' and many tree-form conifers) is that the plants grow as "branches" rather than as leaders and make a sprawly bush for several years. After a number of years, when enough roots have been established, a true leader shoot will emerge from the base and at that time the "branch shoots" should be removed to get a "normal" tree-form growth. An extremely rare tree in North America and probably of little commercial value except as a replacement for *C. lanceolata* to provide a similar plant more in scale with residential properties and with more graceful foliage.

7. *Fothergilla gardenii* (Hamamelidaceae). A native North Carolina deciduous shrub notable for its white "bottle-brush" flowers produced in spring on the tips of branches. Typically seen as a garden plant 3-4' tall but i've seen many old specimens in Europe 6-8' (the best of which is a magnificent dense, shared specimen at the entrance to Mt. Usher Garden in Ireland a good 10' tall and covered in flowers). Introduced to European gardens in 1765 and very common there in the nursery/landscape trade as a highly desirable garden plant - but virtually unavailable in North Carolina where it is native. Best in moist well-drained soils in partial shade - similar to azalea needs. Grown from seed or semi-hardwood cuttings in early summer under mist. The cuttings root easily - fast and in high percentage - but like dogwood, deciduous azaleas, Japanese maples, witch hazel and other plants - are often difficult to keep alive after rooting unless a flush of growth is achieved before they go dormant. Plants with this characteristic are best handled by rooting as early in the season as possible in deep flats, placing the flats of rooted cuttings under lights at night to extend photoperiod and get a flush of growth (in greenhouse). Then remove from lights and allow to go dormant, overwinter undisturbed in protected cold frame, and remove from the flats for potting only after they begin to break dormancy and send out a flush of growth in spring. Our plants being distributed are directly from the mist bed - so they may be difficult to keep going - if you have a greenhouse and lights it would be best to pot and place them there.

8. *Herniaria glabra* (Caryophyllaceae) - Burstwort. An excellent low (1") mat-forming evergreen groundcover native to Europe and hardy for use through North Carolina. A very fine textured plant giving the appearance of moss from a distance, and is excellent in crevices of flagstone and other paths. Easily propagated by division of clumps or by cuttings under mist. Established rooted plants spread laterally about 2-4" per year and do well in both sun or partial shade. Widely used in European gardens but almost unknown in North Carolina.

9. *Ilex rotunda* (Aquifoliaceae). An evergreen holly species from Southeast Asia introduced to cultivation in 1849. In habit and growth it is very reminiscent of *Ligustrum japonicum* growing to 15' and has very similar hardiness. Our 2 plants had grown very fast and well - were 6-8' tall after 2 years and were looking very promising as hedge plants. Our January -9oF killed both plants (from which we had taken these cuttings only weeks earlier). From our past experience I would say dependable to 10oF, injured at 5oF and probably killed below 0oF so it will be a plant only for the eastern half of North Carolina. Very easily propagated from cuttings almost any time of year.

10. *Juniperus rigida* 'Pendula' (Cupressaceae). A beautiful small tree to 20' with gracefully drooping branches, native to Japan, Korea, and North China and introduced by Veitch in 1861. With its soft weeping habit the name "rigida" seems inappropriate but refers to the very stiff or rigid individual needles. The species in the wild is quite variable from low spreading shrubs to very upright trees. The 14' tall parent plant of these cuttings is in the NCSU Arboretum (now the JC Raulston Arboretum) and had grown ca. 3'/year in height, is strongly pendulous, and is a female plant bearing attractive bluish-black fruits. This species is sometimes taken in December-January, treated with #3 Hormodin and stuck under mist. The wood should be mature with some reddish bark at the base, but older pencil or larger sized cuttings have not rooted well. It will tolerate the most difficult of sites (in sun) and no other ornamental

has quite its form and texture in the landscape. It would be a useful commercial plant and a viable nursery crop to produce with its ease of propagation, rate of growth, toughness and freedom from problems.

11. *Lagerstroemia indica* 'Dallas Red' (Lythraceae). Crepe myrtles need no introduction as one of the most popular basic landscape plants in the eastern two-thirds of North Carolina. The winters of both 1984 and 1985 have been devastating to these plants with many old plants 20' tall with massive trunks being killed or badly injured. We have 34 cultivars in the NCSU Arboretum (now the JC Raulston Arboretum) and most were killed to the ground this year. *L. faurei* and cultivars derived from it 'Natchez', 'Tuscarora' and 'Muskogee' had very little injury. 'Dallas Red' was completely uninjured and the only *L. indica* to come through well. It grows very fast, becoming a large plant, and makes a spectacular show with big panicles of deep "red" flowers. Like all crepe myrtles it propagates very easily from either dormant hardwood cuttings in winter, or softwood cuttings in summer.

12. *Ligustrum lucidum* 'Davidson Hardy' (Oleaceae). The last two winters have been devastating to the evergreen privets in North Carolina landscapes and this year even large old trees were killed to the ground. Many people said good riddance - but the plants are valuable as fast-growing, cheap evergreen screening materials. One plus (far outweighed by the damages) of a hard winter is that it shows the hidden genetic diversity in physiological capabilities of different individuals in the population - in this case more cold-tolerant forms. This form being distributed is from an individual plant on the Davidson College campus which tolerated below -10oF in full sun without any tip injury and no foliage scorch, while all the other plants of the same species around it were killed to the ground. The parent plant (beside the sciences building) is 15' in diameter with very handsome foliage. It should be distributed through the industry and grown instead of propagating those coming back from root systems to insure hardier plants in the future. Contact Irwin Brawley, Superintendent of Grounds at Davidson College for permission to gather cuttings (892-2000), extension 119).

13. *Lonicera sempervirens* f. *sulphurea* (Caprifoliaceae). A yellow-flowered form of the common native coral honeysuckle which grows throughout the S.E.U.S. Easily rooted from cuttings and rapid growing as a semi-evergreen vine. A very ornamental vine deserving greater use as an alternative to the also excellent coral-colored species which is difficult to use with some colors - particularly that of certain bricks.

14. *Passiflora incarnata* 'Alba' (Passifloraceae) - white maypops. A white-flowering form of the native passion flower growing throughout the S.E.U.S. An aggressive vine which dies back to the ground each year. Since it spreads by underground shoots it is best to use it as a groundcover plant. It flowers from June into the fall with beautiful delicate lacy flowers. Propagated by division or very easily by summer cuttings under mist.

15. *Pinckneya pubens* (Rubiaceae). A very rare S.E.U.S. native deciduous tree growing in low swampy woods of coastal areas of South Carolina, Georgia, and Florida. It is a monotypic genus (i.e., only one species exists) found only in the U.S. I know of no book which discusses it except for the botanical description in the Manual of the Vascular Flora of the Carolinas. A large shrub or small tree growing to 15-20' in height with inflorescence at tips of branches in June-July looking much like pink poinsettias 8-12" in diameter. Reputed to be tender since it is found only in southern coastal areas but the last two severe winters have not caused any twig dieback and it should be hardy to at least -10oF in areas with ample summer heat to ripen wood. Excellent on low mushy sites in the sun where swamp plants such as *Taxodium*, *Cephalanthus* and *Myrica* thrive. Possibly the easiest woody plant to propagate - rooting very rapidly and easily from summer softwood cuttings under mist. Will grow 3-5' per year in container culture. A completely unknown plant with rather good possibilities for commercial success once seen and known.

16. *Pistachia chinensis* (Anacardiaceae) - Chinese Pistachio. An uncommon superb small deciduous tree to 20' that badly needs to be in the landscape trade. Native to Central Western China and introduced to cultivation in 1897. It is fully hardy throughout North Carolina and will tolerate all kinds of soils. Pest and problem free - very tolerant of tough inner-city urban environments. Flowers (spring) and fruit (fall noticeable but not showy - grown for its handsome cut-leaf foliage which turns orange to red in the fall. Probably the single best tree for fall color in the warmer deep South where fall color rarely develops well. Grown only from seed at present, but enough variation exists in seedlings to warrant selection of greatly improved cultivars for grafting.

17. *Rosa spinosissima* 'Petite Pink' (Rosaceae) - Scots Rose. A cultivar of this European and North and West Asian species discovered growing on a plantation on the Cape Fear River near Wilmington. Produces a low, dense suckering shrub about 2' tall, covered with pink flowers in early summer. The foliage is delicately cut and quite handsome even when the plant is out of flower - reputed evergreen to 10oF. Has excellent commercial potential for a medium height flowering groundcover for sunny areas. Very easily propagated from leafy cuttings at any time of year and can be built up in numbers quite rapidly (well rooted in 3-4 weeks). A well rooted cuttings potted in spring can provide a full gallon can plant for sale by fall. An excellent plant (can I really be saying that about a rose?)

18. *Salix alba* f. *sericea* (Salicaceae) - Silver Willow. In warmer areas of North Carolina where the Russian olive (*Elaeagnus*) will not grow, this plant is probably the best white/silver/grey foliated large tree for the landscape. Typical of willows it roots very easily and grows rapidly on a wide variety of soils. The species is native to Europe, Asia and North Africa and this form received an award of Garden Merit from the Royal Horticultural Society in 19659 as an outstanding plant. Excellent commercial potential and a fine plant to add some much needed color into the solid green North Carolina landscape. Dynamite planted with purple foliated beech, plum, or smoke tree (*Cotinus*).

19. *Sequoia sempervirens* 'Albospicata' (Taxodiaceae). A dwarf white-tipped form of the California coastal redwood - a species which is noted for having the tallest tree on earth at 378'. The form was discovered in 1967 and is characterized by having creamy-white shoot tips - for us very showy as shoots emerge and gradually fading back to almost solid green by autumn. Though called a dwarf plant - as it gets a well-established root system - strong upright shoots emerge which take on true tree-form growth. It seems much hardier than the species showing no injury this year when all our species trees were killed to the ground. Probably adapted to eastern two-thirds of the state, would survive in mountains if protected under snow cover. For us it has rooted slowly but in good percentages - above 70% - when taken in mid-winter and placed under mist. It tends to produce only one or two roots which grow straight down with no branching and becomes difficult to pot successfully. Would be useful to root in a wire mesh "bottomless" flat suspended in air to get branching on young roots. Probably no commercial potential for North Carolina but an interesting and beautiful garden subject. If one wants a redwood in North Carolina - this is the one most likely to succeed. Best in partial or light shade on moist, well-drained soils.

20. *Thuja plicata* 'Hogan' (Cupressaceae). A cultivar of the western red cedar native to the U.S. Pacific Northwest. Our trials with the species and a number of cultivars indicate this is one of the overlooked plants of great potential for all areas of North Carolina. They are fast growing (the species nearly as fast as Leyland cypress at 2-4'/year), tolerant of our poorly drained soils, and so far pest-free. They

should make excellent hedging plants, large individual specimen plants (in Washington attaining 150'!), and there are fine dwarfs, as well as golden and variegated forms. 'Hogan' is green, fast growing, narrowly columnar. Cuttings have rooted 95%+ taken in December/January with #3H under mist. 'Semperarescens', 'Stoneham Gold' and 'Zebrina' are three excellent colored foliage cultivars. We find 'Rogersii' scorches badly in full sun in the winter and needs winter shade where it is perfectly hardy.

21. *Ulmus parvifolia* 'Sempervirens' (Ulmaceae). A so-called "evergreen" form of the true Chinese elm grown very widely in California. The leaves remain on the tree in the fall and are tolerant of low temperatures t about 15-20oF at which point they are killed and then slowly "weather" away from the tree during the winter. In Raleigh the foliage often remains green and attractive until Christmas, greatly extending the "season" of the tree. In coastal North Carolina area the tree may often be truly evergreen. The trunk and limbs should be nearly as hardy as the species and I would expect it to take -10oF or lower (the species can tolerate -25oF - but very dependent on seed source as it is native from Formosa to Northern China). *U. parvifolia* should be much more widely grown and used as an urban tree because of its resistance to disease and the extremely handsome bark and fine foliage. Semi-hardwood cuttings in early summer under mist root 85%+ for us. There is a problem with cutting-grown trees compared to seed-grown trees in that they behave as a "branch" for some years rather than developing a strong upright central leader. Stubbing a tree to near the ground in the spring as new

growth begins after it has been growing in the field 2-3 years may induce strong true leader growth (one must prune the many sprouts back to just one as they emerge).

22. *Vitex negundo* var. *heterophylla* (Verbenaceae). The vitex are large shrubs or small trees producing white or blue flowers in mid-summer. This species with blue flowers was introduced to European cultivation about 1697 from northern India or China. The form being distributed here was obtained from the Arnold Arboretum in Boston and has two very desirable characteristics not present in most forms presently grown in North Carolina. The leaves are the most cut-leaf and lacy of any vitex I've ever seen and the plant is handsome even out of flower. In addition, it is very hardy - most plants in our vitex collection were killed to the ground this year or heavily damaged whereas this plant had no twig dieback at all. Like all vitex - very easily propagated by softwood or semi-hardwood leafy cuttings in summer.

BOOK NEWS

The ultimate reference book on herbs has recently been published by: Archon Books, P.O. Box 4327, 995 Sherman Avenue, Hamden, CT 06514. Herbs: An Indexed Bibliography 1971-1980 by J. E. Simon, A. F. Chadwick, L. E. Craker, Editors. Price \$71.50; which includes postage and handling. Make checks payable to: The Shoe String Press. "This comprehensive, international bibliography is organized as follows: For each of the 64 major herbs there is a narrative description which gives general, up-to-date facts about plant chemistry, botany, horticulture, pharmacology, and use. Following each narrative are bibliographical references that are given in their entirety in the subject classification. More than 7,000 entries from scientific journals, books, research reports, magazines and industry journals are referenced in a massive ten-part subject classification."

Quote: Two-time Academy Award winner Glenda Jackson advised young actors and actresses not to pursue the "cruel" profession unless it is "the very blood that courses through your veins. If it isn't the only thing you're interested in the whole world don't do it. And have another job that will earn you money." Exactly the advice I offer students preparing to enter a career in horticulture. It has many wonderful pluses, but for most, money is not one of them.

A rather remarkable statistic showed up in an article "Saved But Threatened" in the May 1985 Audubon Magazine. The International Union for Conservation of Nature and Natural Resources recently released lists of the world's 12 most endangered habitats, animals and plants. In the plant list, the biggest surprise was the inclusion of the most common houseplant in the world -- the African Violet, *Saintpaulia ionantha*. In the wild it is verging on extinction and a recent expedition to its only remaining habitat in the mountains of central Tanzania found only three plants. It is chiefly endangered by removal of forests of large trees for firewood or to grow farm crops.

In an issue of *The Garden* from the Royal Horticultural Society devoted to an interview of Christopher Lloyd and discussion of his works were several quotes I treasure. "Lloyd confesses to a hatred of machinery - particularly mowers - and admits that he's never mown a lawn in his life. --- "I loathe machinery. It always does the wrong things with me; it makes noises and it smells." Various people have said that I seem to have had more failures than successes. Well I dare say I have but I've enjoyed the whole experience and I'm a bit wiser at the end of it." All this talk about labour saving seems to me to be such a bore. Labour saving is for people who don't want to garden in the first place. Labour-intensive gardening is much more fascinating."

I always have pleasure in finding and promoting a new North Carolina source of fine unusual plants - and it is also a treat to announce the discovery of a source of high quality rare books in North Carolina. Mr. John D. Cheesborough produces a listing of books (catalog \$2 - refundable with an order) - Avocet Books, 827 South Horner Boulevard, Sanford, NC 27330 (919)-775-7926) - with many very choice books. They range from things like a 1930 John Wister book *Bulbs for American Gardens* at \$25 - all the way to an original 1793 William Bartram book on exploration of the S.E.U.S. at \$1,000; a 1770 Peter Kalm (the Swede after whom *kalmia* was named) book on his explorations of America at \$2,200; and an Andre Michaux *North American Sylva* (two volumes) of 1857 at \$1,200. He also carries prints (original Audubon's at \$150-750; Mark Catesby at \$800-1,000, etc.) and will do searches for titles particularly desired.

Another similar firm dealing in scholarly natural history out-of-print books is Gary Wayner-Bookseller, Route 3, Box 18, Fort Payne, AL 35967 (205-845-5866) - catalog \$1 per year.

A new publishers' discount catalog I've begun receiving recently comes from Edward R. Hamilton, Bookseller, Falls Village, CT 06031-0358. It covers the whole realm of popular books but occasionally there are plant books of interest.

The NCSU Arboretum (now the JC Raulston Arboretum) received some excellent publicity nationwide thanks to Sandra Ladendorf with her article in the February 1985 issue of *Weeds, Trees and Turf* (Vol. 24(2): 27, 31, 82). This is a widely read publication in the professional landscape maintenance field and we received many favorable responses from readers interested in our program, it uses in teaching, trial of new plants and introduction of them into the nursery industry. Many thanks Sandra for a most flattering report.

The best thing I've subscribed to in a long time in the publishing world is *HortIdeas*, published monthly by Greg and Pat Williams, Route 1, Box 302, Gravel Switch, KY 40328. The \$10 annual subscription brings 12 issues of 12-16 pages of incredibly diverse and format and they must read an incredible number of sources to come up with each issue. I'd strongly recommend subscribing but if you're not convinced, you can get a single issue for \$1 and look it over and decide for yourself. Wonderful!

Quote: "I learned whenever I tried to tell someone what to do, nothing happened - I just couldn't carry it off. When people are ready to, they change. They never do it before then, and sometimes they die before they get around to it. You can't make them change if they don't want to, just like when they do want to, you can't stop them" - Andy Warhol on trends in art. Exactly my experience in trying to introduce plants from the arboretum to the nursery trade - my most recommended plants have been totally ignored, unrecommended have been grown widely.

A favorite quote from an article in *Time* about a musician returning to music after once giving up his career because of the pressure and tension in it originally. "I've started taking lessons again, and I'm going to start playing in public again. It still terrifies me, but I'm going to force myself to do it. Because I think it's one of the nice things about middle age that you know that even if it's a disaster, you don't have to kill yourself." (JCR Note - thank heavens for middle age and freeing of the absoluteness of the 20's).

Another quote came from a newspaper review of a biography of Tennessee Williams and read "his career at best resembled a major derailment out of which would occasionally emerge binding flashed of stage light. By his own estimate his life consisted of 50 percent work, 35 percent struggle against madness, and 15 percent friends and lovers." Upon reflection that sounded about right for me as well - though today it's shifting toward a reversal of the latter two figures - how about your life?

It was a surprise and delight to receive a letter from Bamberg, Germany (in German which I had to have translated) from a man who had been visiting the U.S. and happened to visit the arboretum. In a lengthy and most complimentary letter he stated "I was overwhelmed with the beautiful complex and the variety and organization of the plants. One can see, that those working with the Arboretum are responsible and like their work and tend to the plants with love and care." He later states "Surely you are on a tight budget and thankful for every donation - as thanks I would like to support your work." So we are delighted to have our first European "Friend" - Mr. Gottfried Ordnung. To me, the remarkable part is to have such praise from a virtually every town. I bubbled and floated for days.

Relatively few North Carolina gardeners probably ever see the high quality magazine *Orion*, a quarterly journal published by the Myrin Institute for the purpose of promoting stewardship and protection of the natural earth; to deepen man's personal connection with the natural world as a source of enrichment and inner renewal. The Spring 1985 (Volume 4, Number 2) issue is devoted entirely to gardens and landscaping with seven excellent articles ranging from horticultural therapy, through heirloom vegetables, to the philosophy of garden design. The great late landscape architect Nan Fairbrother is quoted from one of her books on the definition of a garden which concludes:

"A Garden is a work of Art using the materials of Nature." It is a lucid definition which includes all fine gardens whatever their style, large or small, formal or wild. It explains why a garden composed only of the common plants of the country, as Versailles was, is so immensely more than the sum of its parts. It explains why gardens, each belonged to, and why there can be many styles of gardens, each equally satisfying to different people. But it is not a definition which includes our much-loved vegetable hotch-potches of flowers and shrubs, nor does it explain the wide appeal of gardens among people who are not at all interested in the arts. I dare say the number of gardeners who consider their garden for its structural qualities is not greater than the number who look at paintings or read poetry. Cobbett had no doubt about it. "The far greater part of persons who possess gardens really know very little about the matter. They possess no 'principles' relating to art."

But, luckily, we can enjoy our gardens very well without any principles at all, for unlike the materials of poetry and painting, the actual stuff of gardens is already significant in itself. Abstract poetry is Jabberwocky, abstract painting is decoration, but abstract flower-growing, although it may not be gardening at all, is a most satisfying occupation, and gives us gardens we delight in, however bad they may be as designs. We really do not care what Le Notre or Capability Brown would think of them, but all the same we should realize humbly that we are no longer the creators of the work of art, but only more or less ignorant patrons who by our protection encourage the plants to produce their own individual beauties."

I particularly enjoyed an article entitled: "Cultivating the American Character - Horticulture as Moral Reform in the Antebellum Era." It analyzes the tremendous boom in .S. horticultural societies and gardening of the 1820-1870's. Americans had great anxiety about the great pursuit of wealth and materialism of that period feeling it would lead to a decline and fall of the nation. Horticulture was considered symbolic of a higher and more cultural nature that society regarded as a desirable alternative. Downing wrote: "We are too

much occupied with making a great deal to have reached that point when a people think it wiser to understand how to enjoy a little well, than to exhaust both mind and body in getting an indefinite more." A most interesting article -- one wonders if today's Yuppie Era of possessing as much as possible will eventually parallel that of a hundred and fifty years ago.

Another article contrasts two markedly different current landscape architects -- Dan Kiley on formal design and A. E. Bye (who recently spoke in North Carolina at the Davidson College Horticultural Symposium -- I've never heard such rave reviews for a presentation from those that attended) on "natural" garden design. The other articles are equally enjoyable and the whole issue is a delight. It may be purchased for \$4 a copy from Orion, Subscription Department, 136 East 64th Street, New York, NY 10021. (Annual subscriptions at \$12/year).

NEW CATALOGS AND PLANT SOURCES OF INTEREST

The July 1985 issue of HortIdeas (see publications section of this newsletter) offered seven nurseries where one can purchase BAMBOOS - one of the harder plants to locate successfully in the nursery trade. To get catalogs send a dollar and a self-addressed stamped envelope to each operation.

Upper Bank Nursery Fruitland Nursery Live Oak Gardens

Box 486 RFD #2, Box 490 Box 284

Media, PA 19063 Mornson, GA 30824 New Iberia, LA 70560

Steve Ray's Bamboo Gardens Endangered Species Northern Gardens

909 79th Place S. 12571 Red Hill Avenue c/o Rick Valley

Birmingham, AL 35206 Tustin, CA 92680 3328 S.E. Kelly

Portland, OR 97202

Morningside Farm Nursery

Rt. 1, Box 151-E

Morrelton, AR 72110

An excellent source for tree seed of many exotic species is Greenfingers Tree Seeds, Indigo Road, Stoneycroft, Liverpool L1365H England. It is the first firm I've found which carries the superb heat-tolerant fir, *Abies firma*, from Japan - which can be grown all the way to the Gulf Coast successfully. It badly needs to be in the nursery trade. I bought a half-pound of seed and germination appears 95%+. They are also a source for *Araucaria araucana*, the monkeypuzzle tree from Chile impossible to find in the east - my half-pound of seed (for about \$10) yielded about 25 vigorous seedlings now about 4" tall. Many other choice plants can easily be grown from seed and no import permits are needed - easy to order.

The Mailorder Association of Nurserymen has just published a new book called "The Complete Guide to Gardening by Mail" which will help you to be a better mailorder gardener. Within the pages of the book are a listing of consumer tips for buying by mail, a new feature from MAN this year, and an expanded list of member firms cross-referenced to the products they catalog. There are now 94 different mailorder nurseries listed, along with 550 gardening plants, seeds and accessories available by mail, cross-indexed for a total of 5,000 listings. Whether you want quality trees, shrubs, roses, bulbs, seeds, fruit trees, hard-to-find plants or much, much more, you'll be able to find the name and address of a nursery who sells them. For your free copy of "The Complete Guide to Gardening by Mail", send a self-addressed, business size (#10) envelope with 40¢ postage to the Mailorder Association of Nurserymen, 210 Cartwright Boulevard, Dept. S, Massapequa Park, NY 11762.

A huge list of unusual dwarf bulbs is available from Potterton and Martin, The Cottage Nursery, Moortown Road, Nettleton, Caistor, Lincs, LN76HX England (Phone: 047-851792). In addition to extensive lists of such common genera as *Allium*, *Anemone*, *Colchicum*, *Crocus* (both fall and spring flowering types), *Cyclamen*, *Iris*, *Narcissus*, and *Tulipa* - there are 22 *Colchicums*, 27 *Fritillaria* (!), 16 *Galanthus* and so forth. These small bulbs are great for rock gardens and pot culture and allow a gardener with limited space to still grow a wide array of plants.

Heathers and heaths are rarely seen in North Carolina - but with planting in raised bark beds as we do in the arboretum display lath house, they will grow and bloom very well. An excellent mail order source is Heather Acres, Inc., P.O. Box 850, 62 Elma-Monte Road, Elma, WA 98541 (206-482-3258). Plants are inexpensive and grow quickly. Over 100 varieties are listed at \$1.75 apiece and collections can be purchased even cheaper.

Many have admired the agapanthus in our garden and the Coker Arboretum - again excellent plants and rarely available at North Carolina nurseries. A mail-order source of the English 'Headbourne Hybrid' Agapanthus is Dunford Farms, P.O. Box 238, Sumner, WA 98390. They also carry another unusual perennial now achieving great popularity on the east coast - The 'Lighter Hybrid' *Alstroemeria*. It is indeed spectacular but I don't know yet how adaptable it might be in North Carolina. But agapanthus - magnificent!

Several listings for sedums and sempervivens have been given in the past and it is good to be able to include a north Carolina grower with an extensive listing for sale by mail - Donnelly's Nursery, Route 7, Box 420, Fairview, NC 28730 - Joy and Russ Donnelly. They also carry about 50 different cultivars of Hedera.

Another catalog new to me was received from Coastal Gardens and Nurseries, Route 3, Box 40, Myrtle Beach, SC 29577 (803-293-2000) with an extensive list of Hosta and a limited selection of other perennials.

One of my most exciting new "discoveries" in ornamental plant production occurred this spring when out of the blue I received a surprise call from a Dutch grower looking for sources of some native North Carolina carnivorous plants that they could use as initial stock plants for their production operation. I couldn't help him - but had a fascinating long conversation and later received literature about their operation. There is great concern here, rightfully, about the overcollecting of these plants in America from the wild for direct sale to consumers rather than nursery propagating them. This Dutch firm has numerous large ranges of greenhouses and are now growing 85 species of carnivorous plants from around the world with over one million plants in production at any given time. They have 800,000 venus fly-traps in production - all cutting grown from stock plants, are doing Sarracenias from leaf cuttings, etc. The irony is that they are now beginning to export native American plants back to the U.S. where there is a huge demand because no American growers have yet tried or learned how to grow these plants; still only collection from the wild and endangering their survival in native habitats. The firm - Creasco, Voshol #1, 1772 Boskoop, Holland - is strictly wholesale in mass quantities - but I'd love to visit it on my next trip to Europe to see their techniques. What is exciting is to know that it can be done well and is being done as a major commercial success. Now if we could only get some American grower to try something besides pot mums of ligustrum for a change.

PLANTS RECEIVED IN THE NCSU Arboretum (now the JC Raulston Arboretum) AUGUST 1984 - JULY 1985

The following list totals 857 new accessions added in the past year. Unfortunately some were ephemeral and no longer dwell with us - but so many are doing so well. There's always something new to discover as you visit the arboretum - "discover the pleasure of plants".

Abelia graebneriana

Abelia schummanii

Abeliophyllum distichum

Abies concolor

Abies homolepis 'Prostrata'

Abies koreana 'Prostrata'

Abies pinsapo 'Glauca'

Acaena argentea

Acantholimon araxanum

Acantholimon glumaneum

Acerer cappodocium

Acer carpinifolium

Acer caudata

Acer distylum

Acer erianthum

Acer flabellatum NA 48989

Acer forrestii

Acer grandidentatum

Acer japonicum 'Aureum'

Acer kawakanii var. *kawakamii*

Acer micranthum

Acer Mono NA 51256

Acer palmatum 'Margaret B.'

Acer pentaphyllum
Acer rubrum var. tridens
Acer tegmentosum
Acer velutinum [NA 21700]
Actinostrobus pyramialis
Adenphora confusa
Adenphora takedae
Aesculus turbinata NA 51305
Aethionena armenum 'Warley Rose'
Agapanthus [blue tipped white]
Agapanthus [white-flowered]
Agave (hardy sp.)
Agave sp.
Akebia quinata 'Rosea'
Alanguin platanifolium
Alchemilla alpina
Alnus formosana
Alnus inokumai
Alnus japonica NA 51168
Alyssum serpyllifolium
Anarchinum howardii
Amelanchier 'Cumulus'
Amelanchier alnifolia
Andromeda polifolia 'Kiri-kaming'
Andryala aghardii
Anemone japonica 'September Sprite'
Anemone nemorosa 'Floreo-plena'
Anemone 'Lychette'
Anemone (form #12)
Anemone var. robinsoniana
Anemonella thalictroides 'Double White'
Arabis ferdinandi-coburgii 'Variegata'
Aralia elata
Araucaria araucana
Ardisia japonica isia japonica 'Beniyuki'
Ardisia japonica 'Chirimen'
Ardisia japonica 'Chiyodo'
Ardisia japonica 'Halenokan'

Ardisia japonica 'Hinode'

Ardisia japonica 'Hinotsukasa'

Ardisia japonica 'Hokan Nishiki'

Ardisia japonica 'Hoshami'

Ardisia japonica 'Ito-fukurin'

Ardisia japonica 'Kimigayo'

Ardisia japonica 'Koganebana'

Arenaria balaerica

Arenaria tetraquetra 'Granatensis'

Arisaema consanguineum

Arisaena consanguineum

Arisarum proboscideum

Artemisia 'Silver Frost'

Artemisia schmidtiana 'Nana'

Aruncus aethusifolius

Asarum caudatum

Asarum hargwegii

'Silver Heart'

Asarum kumageanum (leaf form #1)

Asarum kumageanum (leaf form #2)

Asarum viridiflora

Asperula pontica

Aspidistra elatior 'Mildy Way'

Asplenium trichomanes

Aster atheratroides var. *viscidulus*

Aster dumosus 'Niobe'

Aster x frikartii 'Monch' (?)

Astilbe Glaberrima var. *saxatilis*

Astilbe simplicifolia

Athrotaxus cupressoides

Aucuba japonica 'Fructu-alba'

Aucuba japonica 'Limbata'

Aucuba japonica 'Longifolia'

Aucuba japonica 'Mr. Goldstrike'

Bellium minutum

Benzoin erythrocarpum

Berberis darwinii

Berberis pumila

Berberis stenophylla 'Nana'
Berberis wilsonae
Betula ermanii
Betula maximowicziana NA 51052
Blechnum spicant
Bletilla striata 'Alba'
Bolax glebaria
Bruckenthalia spiculifolia
Buddleia crispa
Buddleia davidii 'Flaming Violet'
Buddleia davidii 'Ile de France'
Buddleia davidii 'Nankatensis'
Buddleia davidii 'Nanko Blue'
Buddleia davidii 'Peace'
Buddleia davidii 'White Bouquet'
Callicarpa japonica var. luxurians
Callicarpa japonica var. luxurians
Callicarpa mollis
Callicarpa tosaensis
Callitris oblongata
Calluna vulgaris 'Sir John Charrington'
Caltha palustris 'Plena'
Camellia 'Lavender Prince II'
Camellia 'Mary Christian'
Campanula cochlearifolia 'Miranda'
Campanula pilosa dasyantha
Campanula pulla
Campanula saxifraga
Carex baccans
Carpinus laxiflora NA 51320
Caryopteris 'Blue Bird'
Caryopteris 'Blue Mist'
Castanea ashei
Castanopsis cuspidata
Ceanothus pumilis 'French Mill'
Cedrus atlantica 'Aurea'
Cedrus deodara 'Cream Puff'
Cedrus deodara 'Shalimar'

Cedrus libani 'Gold Tip'
Cephalotaxus chinensis
Cephalotaxus harringtonia 'Duke Gardens'
Cercidiphyllum magnificum
Cercidiphyllum magnificum
Cercidum floridum
Cercis chinensis
Cercis chinensis 'Avondale'
Cercis chingii
Cercis racemosa
Cercocarpus ledifolius
Chaenomeles speciosa 'Low n' White'
Chamaecyparis nootkatensis 'Compacta'
Chamaecyparis obtusa 'Aurea'
Chamaecyparis obtusa 'Confuscious'
Chamaecyparis obtusa 'Lycopodioides Aurea'
Chamaecyparis obtusa var. formosana
Chamaecyparis obtusa pisifera 'Gaylord White'
Chamaerops humilis
Chionanthus nitens
Cinnamomum japonicum
Cladrastis kentuckea 'Rosea' [seedlings]
Clechnum penna var. narina
Clematis alpina
Clerodendron trilobatum
Cleyera fortunei 'Variegata'
Cleyera japonica 'Variegata'
Clivia sp.
Codonopsis clematidea
Colletia armata
Cornus alternifolia 'Variegata'
Cornus nas 'Golden Glory'
Coronilla valentina
Cortaderia selloana
Cortaderia selloana 'Argentea'
Cortaderia selloana 'Gold Band'
Cortaderia selloana 'Pumila'
Cortaderia selloana 'Rentaleri Carminea'

Cortaderia selloana 'Richardii'

Cortaderia selloana 'Rosa Feder'

Cortaderia selloana 'Sunningdale Silver'

Cortaderia selloanatusa natthioli

Cortaderia selloanaylopsi gotoana

Cortaderia selloanaylopsi platypetala

Cortaderia selloanaylopsi platypetala

Cortaderia selloanaylopsi wilmottiae

'Spring Purple'

Cotoneaster 'Cortaderia selloanaal Beauty'

Cotoneaster dammeri 'Strybs Findling'

Cotoneaster microphylla 'Cochleata'

Cotoneaster rothscholiana

Cotoneaster sp.

Crataegus monogyna 'Flexuosa'

Cryptomeria japonica 'Benjamin Franklin'

Cryptomeria jpaonica 'Compressa'

Cryptomeria japonica 'Grokumo'

Cryptomeria kawai

Cupressocypris leylandii 'Contorta'

Cupressocypris leylandii 'Hyde Hall'

Cupressocypris leylandii 'Robinson's Gold'

'Silver Dust'

Cupressocypris leylandiiressus arizonica

'Clemson Green'

Cupressocypris leylandiiressus

duclouxiana

Cupressocypris leylandiiress duclouxiana

Cupressocypris leylandiiressus funebris

Cupressocypris leylandiiressus glabra

'Arctic'

Cupressocypris leylandiiressus glabra

'Blue Ice'

Cupressocypris leylandiiressus glabra 'Silver Smoke'

Cupressocypris leylandiiressus

macnabiana

Cupressocypris leylandiiressus

macrocarpa

Cupressocyparis leylandii sargentii

Cyathodes colensoi

Dacrydium franklinii

Daphne caucasica

Daphne cneorum 'Eximia'

Daphne cneorum 'Eximia'

Daphne cneorum 'Pygmaea Alba'

Daphne collina

Daphne odora 'Leucanthe'

Daphne retusa

Daphne tangutica

Daphne x *burkwoodii* 'Lavenrii'

Daphne x *mantensiana*

Daphne x *matensiana* 'Manten'

Daphniphyllum macropodium 'Humile'

Daphniphyllum macropodium 'Humile' (female)

Delosperma cooperi

Deutzia gracilis [variegated]

Deutzia mingpoensis

Deutzia pulchra 'Puntata'

Kianthus 'LaBourbille White'

Dianthus noeanus

Dicentra 'Adrian Bloom'

Dicentra candadensis

Dicentra cucullaria

Dicentra oregona

Disoporus texana

Dipteronia sinensis

Disporum flavens

Disporum smithii

distylum racemosum

Dodecatheon meadia 'Album'

Draba olympica

Drimys winteri

Edgeworthia papyrifera 'Eco-Yuka'

Elaeocarpus sylvestris

Empetrum rubrum var. *tomentosum*

Enkianthus campanulata var. *palibani*

Enkianthus chinensis

Enkianthus subsellis 'Red Bells'

Enkianthus subsessilis

Epimedium pinnatum var. colchicum

Epimedium rubrum

Epimedium x versicolor 'Sulphureum'

Epipactis gigantea

Erinacea pungens

Erinus alpinus 'Albus'

Eriobotrya deflexa

Erodium cheilanthifolium

Erodium nacradenum 'Roseum'

Eryngium alpinum 'Blue Star'

Erythrina herbacea

Euonymus bungeanus

Euonymus fortunei 'Sunspot'

Euonymus fortunei 'Sunspot'

Euonymus fortunei var. radicans 'Harlequin'

Euonymus sieboldii

Euptelea polyandra

Europs acraeus

Evodia daniellii

Evodia hupensis

Festuca amethystina var. superba

Ficus pumila 'Variegata'

Firmiana simplex

Fitzroya cupressoides

Forsythia 'New Hampshire'

Forsythia giraldiana

Forsythia koreana 'Ilgwang'

Fragaria gracilis NA 49215

Franklinia alatamaha

Fraxinus excelsior 'Pendula'

Fremontdendron 'San Gabriel'

Gaultheria merrilliana

Genista dalmatica

Genista delphinensis

Gentiana 'Asiatic Turquoise'

Gentiana acaulis var. *clusii*

Gentiana chachemera

Gentiana calycosa

Gentiana logodechiana

Gentiana scabra

Geranium dalmaticum 'Album'

Geranium magnificum 'Johnsons Blue'

Geranium stapfianum

Geranium subcaulescens

Globularia cordifolia

Globularia trichosantha

Grewia biloba var. *parviflora*

Gypsophila repens 'Dubia'

Gypsophila tenuifolia

Hamamelis 'Firecracker'

Hamamelis 'Gold Crest'

Hamamelis 'Westerstede'

Hamamelis mollis var. *brevipetala*

Hamamelis x *intermedia* 'Jelena'

Hebe 'Carl Teschner'

Hebe buchananii

Hebe buchananii 'Minor'

Hebe carnosula

Hebe christiansii

Hebe cupressoides

Hebe gibbsii

Hebe hectori

Hebe McEwenii

Hebe pauciramosa

Hebe pimeleoides

Hebe pinguifolia 'Pagei'

Hebe youngii

Hedera Helix 'Asterisk'

Hedera helix 'Boskoop'

Hedera helix 'Kobold'

Hedera helix 'Mis Maroc'

Hedera helix 'Ustler'

Hedera helix 'Wichtel'

Helianthemum oblongatum

Helianthus salicifolium

Helichrysum bellidioides

Helichrysum selago

Heptacodium jasminoides

Heracleum nantegassianum

Hexastylis arifolia

Hibiscus 'Texas Star'

Hibiscus syriacus 'Helene'

Hosta 'Puckered Giant'

Hydrangea anomala ssp. *petiolaris*

Hydrangea aspera var. *sargentiana*

Hydrangea nacrophylla f. *normalis*

Hydrangea quercifolia

Hydrangea quercifolia

Hydrangea serrata 'Grayswood'

Hydrangea sp. 'Ayesha'

Hymenocallis henryi

Hymenocallis keynesii

Hypericum androsaenum 'Mrs. Gladys Brabazon'

Hypericum balearicum

Hypericum cerastoides

Hpericum x *moseranum* 'Tricolor'

Iberis sayana

Ilex 'Autumn Glow'

Ilex 'China Girl'

Ilex 'Dragon Lady'

Ilex 'Emily Brunner'

Ilex 'Harvest Red'

Ilex 'Raritan Chief'

Ilex cassine

Ilex crenata 'Dwarf Pagoda'

Ilex crenata 'Golden Helleri'

Ilex crenata 'Midas Touch'

Ilex integra (variegated)

Ilex pedunculosa 'Prostrata'

Ilex rotunda (NA 45178)

Ilex sugeroki

Ilex verticillata 'Chrysocarpa'

Ilex verticillata 'Tiasquam'

Ilex vomitoria [yellow-fruited]

Illicium henryi

Indigofera heterantha

Iris 82R226

Iris delaveyi 62J058

Iris ensata var. *spontanea*

Iris hexagona

Iris hookeri 82P205

Iris isetosa 820215

Iris laceea 'Kyong-Ju'

Iris laevigata 'Albovariegata'

Iris sanguinea 'Ullong-Do'

Iris spuria 'Shellford Giant'

Iris spuria K82M1140

Iris tridentata

Iris unguicularis

Iris virginica 82N193

Jasminum beesianum

Juglans ailanthifolia NAS 51209

Juniperus conferta cv.

Juniperus recurva var. *coxii*

Juniperus rigida

Kadsura japonica

Kalmia latifolia 'Bull's Eye'

Kalmia latifolia 'Carousel'

Kalmia latifolia 'Elf'

Kalmia latifolia 'Freckles'

Kalmia latifolia 'Sarah'

Kalmia latifolia 'Shooting Star'

Kalmia latifolia 'Stillwood'

Kalmiopsis leachiana 'Curry Country'

Kalmiopsis leachiana 'Umpqua'

Keteleeria davidiana

Keteleeria evelyniana

Koeleria brevis

Kolkwitzia amabilis

Kolwitzia amabilis 'Pink Cloud'

Lagerstroemia (indica x faurei) NA 48471

- dark pink

Lagerstroemia (indica x faurei) NA 48472 - white, pendulous

Lagerstroemia (indica x faurei) NA 52711 - med. pink

Lagerstroemia (indica x faurei) NA 52714 - dark pink

Lagerstroemia (indica x faurei) NA 54949 - dark magenta

Lagerstroemia (indica x faurei) NA 54973 - lt. pink

Lagerstroemia (indica x faurei) NA 54974 - pale pink

Lagerstroemia (indica x faurei) NA 54975 - med. lavender

Lagerstroemia (indica x faurei) NA 54976 - dark coral

Lagerstroemia (indica x faurei) NA 54977 - clear med. pink

Lagerstroemia (indica x faurei) NA 54978 - med. lavender

Lagerstroemia (indica x faurei) NA 54979 - lt. lavender

Lagerstroemia (indica x faurei) NA 54980 - clear med. pink

Lagerstroemia (indica x faurei) NA 54981 - dark red

Lagerstroemia (indica x faurei) NA 54982 - med. lavender

Lagerstroemia indica 'Diane'

Lagerstroemia indica 'Firebird'

Lagerstroemia indica 'Pink Lace'

Lagerstroemia indica 'Twilight'

Lagerstroemia indica 'Weeping White'

Laurus x Umbellaria

Leptodermis oblongata

Lespedeza (unknown sp.)

Lespedeza thunbergii (variegated clone)

Leucophyllus candidum 'Silvercloud'

Leucophyllum frutescens 'Whitecloud'

Leucothoe davisae

Leucothoe keiski

Libocedrus bidwillii

Ligustrum lucidum 'Davidson Hardy'

Ligustrum lucidum 'Excelsum Superbum'

Ligustrum quihui

Lilium leichtlinii

Lilium sulphureum

Limonium minutua

Lindera citriodora

Lindera strychnifolia

Linum salsaloides 'Nanum'

Liquidamber styraciflua 'Aurora'

Liquidamber styraciflua 'Kia'

Liriodendron tulipifera 'Arnold'

Liriodendron tulipifera 'Aureo-marginatum'

Liriope 'Gilner White'

Lonicera (blue foliage)

Lonicera nitida 'gabbeson's Gold'

Lonicera utahensis

Lonicera x heckrottii 'Gold Flame'

Luzula nivea 'Nana'

Lycoris albiflora

Lycoris sp.

Lythrum 'Morden Bleam'

Lythrum 'Morden Rose'

Maachia amurensis

Machilus thunbergii

Maesia japonica

Magnolia 'Caerhay's Belle'

Magnolia 'Galaxy'

Magnolia 'Grace McDade'

Magnolia 'Green Mist'

Magnolia 'Marfory Gossler'

Magnolia 'Maryland'

Magnolia 'Orchid'

Magnolia 'Peter Smithers'

Magnolia 'Pinki'

Magnolia 'Randi'

Magnolia 'Randi'

Magnolia 'Spectrum'

Magnolia 'Sundew'

Magnolia 'Susan'

Magnolia acuminata

Magnolia ashei

Magnolia ashei

Magnolia bodneri

Magnolia campbellii var. *mollicomata*

Magnolia cylindrica

Magnolia dawsoniana 'Chyverton'

Magnolia grandiflora 'Baldwin'

Magnolia grandiflora ' Edith Bogue'

Magnolia grandiflora 'Little Gem'

Magnolia kobus var. stellata 'Centennial'

Magnolia kobus var. stellata 'Jane Platt'

Magnolia kobus var. stellata 'Kikwaziki'

Magnolia kobus var. stellata 'Rosea'

Magnolia kobus var. stellata 'Royal Star'

Magnolia kobus var. stellata 'Rubra'

Magnolia pyramidata

Magnolia quiquepetala 'O'Neill'

Magnolia salicifolia

Magnolia sieboldii [yellow stamens]

Magnolia sinensis

Magnolia speciosa

Magnolia springeri 'Diva'

Magnolia virginiana 'Milton'

Magnolia watsonii

Magnolia x kewensis 'Wada's Memory'

Magnolia x loebneri 'Merrill'

Magnolia x loebneri 'Spring Snow'

Magnolia x loebneri 'Willowwood'

Magnolia x soulangeana 'Lennei Alba'

Magnolia x soulangeana 'Lilliputian'

Magnolia x soulangeana 'Robusta'

Magnolia x soulangiana 'Picture'

Magnolia x veitchii

Magnolia [deVos Group] 'Ann'

Magnolia [deVos Group] 'Betty'

Magnolia [deVos Group] 'Judy'

Magnolika x loebneri Neil McEachern'

Mahonia nairei

Mahonia nepalensis

Mahonia wagneri 'King's Ransom'

Mahonia x Nandina domestica

Malus baccata var. manshurica

Manglietia insignis

Margyricarpus setosus

Margyricarpus setosus

Meliosma myriantha

Michelia (unknown sp.)

Michelia compressa

Michelia doltsopa

Michelia figo 'Port Wine'

Microbiota decussata

Microbiota decussata

Microstrobilus fitzgeraldii

Millotus japonica

Myrica californica

Myrica nana

Nandina domestica 'Okame'

Nandina domestica 'San Babriel'

Nandina domestica 'Senbazuri'

Nandina domestica 'Soga-Ikada'

Nandina domestica 'Tsukmo'

Neillia sinensis

Neolitsea aciculata

Neolitsea sericea

Nerine angustifolia

Nerine bowdenii 'Fenwick'

Nerine boedenii 'Manina'

Nerine flexuosa 'Alba'

Nerine forbesii

Nerine hirsuta

Nerine platypetala

Nerine undulata

Nerine bowdenii var. wellsii

Nolina (unknown sp.)

Nothofagus fusca

Oenothera 'Fireworks'

Olearia x scilloniensis

Omaphalodes cappadocica

Ophiopogon ohwii

Orixa japonica

Osmanthus heterophyllus 'Aureus'

Osmanthus heterophyllus 'Kembu'

Osmanthus heterophyllus 'Purpureus'

Osmanthus suavis

Ostemeles subrotunda

Ozothamnus ledifolia

Parabenzoim trilobum

Parrotiopsis jacquemontii

Pellaea atropurpurea

Pellaea brachyptera

Penstemon 'Brietenbush Blue'

Petrophytum hednersonii

Petrorhagia saxifraga 'Double White'

Philadelphus coronarius 'Variegatus'

Philadelphus lewsii var. *californica*

Philadeophus microphyllus

Phillyrea angustifolia

Phlox adsurgens 'Alba'

Phlox carolina 'Rosalinde'

Phlox purpurea 'Arroyo'

Phormium 'Apricot Sunset'

Phormium 'Dazzler'

Phormium 'Duet'

Phormium 'Dusky Chief'

Phormium 'Maori Sunset'

Phormium 'Rainbow'

Phormium 'Sundowner'

Phormium 'Tricolor'

Phormium 'Yellow Wave'

Phormium 'tenax' 'Bronze Baby'

Photinia glabra 'Variegata'

Photinia glomerata

Photinia x fraseri 'Red Robin'

Phylliopsis hillieri

Phyllitis scolopendrium 'Cristatum'

Phyllocladus alpinus

Picea abies 'Maxwellii'

Picea 'Procumbens'

Picea asperata

Picea bicolor 'Howell's Dwarf'

Picea brewerana

Picea gemmata

Picea glauca 'Conica'

Picea glauca 'Echiniformis'

Picea glauca 'Hillside'

Picea koyamai

Picea morrisonicola

Picea omorika

Picea omorika 'Microphylla'

Omorika 'Pendula'

Picea pungens 'Hunnewelliana'

Picea pungens 'Mission Blue'

Picea rubens

Pieris 'Flame of the Forest'

Pieris 'Mountain Fire'

Pieris forrestii 'Wakehurst'

Pieris japonica 'Bisbee Dwarf'

Pieris japonica 'Compacta'

Pieris japonica 'Crispa'

Pieris japonica 'Temple Bells'

Pileostegia viburnoides

Pimelia coarctata

Pinus aristata

Pinus armandii

Pinus ayachuite

Pinus bungeana

Pinus cembra 'Silver Sheen'

Pinus elliotii

Pinus flexilis 'Glauca *Pinus endula*' NA

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Pinus johanus

Pinus maximartinezii Coker

Pinus montezumae

Pinus parviflora 'Gimborn's Ideal'

Pinus strobus 'Bennetts'

Pinus sylvestris 'Mitsch's Weeping'

Pinus taiwanensis

Pinus thunbergii 'Yatsu Ban-shoho'

Pinus thunbergii [dwarf, corkbark]

Pinus yunnanensis

Pistacia texana

Pithyrogramma triangularis

Pittosporum tobira

Pittosporum tobira 'Variegata'

Pittosporum tobira 'Variegata'

Pittosporum [hardy clone]

Platanus cashmerana

Platycladus orientalis 'Rafels'

Pleione bulbocodioides 'Polar Sun'

Poa alpina var. *vivipara*

Podocarpus nivalis

Polemonium carneum

Polygala paucifolia

Polygonum capitatum

Polygonum vacciniifolium

Polypodium vulgare 'Bifidum'

Polypodium vulgare 'Cornubiense'

Polystichum munitum 'Imbricans'

Portulaca oleracea 'Wildfire' [7 colors]

Pourthiaea villosa

Prunus laurocerasus 'Marbled White'

Prunus subhirtella 'Autumnalis'

Pseudolarix amabilis

Pseudotsuga menziesii 'Fastigiata'

Pseuotsuga menziesii 'Hillside Gem'

Pseudotsuga menziesii 'Pumila'

Pterocarya caucasica

Pterocarya tonkinensis

Pterocephalis parnassii

Pterostyrax corymbosa

Punica granatum 'Kanokosuigno'

Punica granatum (variegated)

Pyracantha sp. 'Shirofu-fuckurin'

Pyracantha sp. 'Shirofu-fuckurin'

Pyxidantha barsulata

Quercus cerris 'Variegata'

Quercus myrsinifolia

Quercus sadlerana

Quercus serrata

Ranunculus gramineus

Raoulia glabra

Raoulia glabra

Raoulia tenuicaulis

Rhamnus crenatus NA 94923

Rhamnus fragula 'Asplenifolia'

Rhododendron carolinianum 'Epoch'

hansianum 'Nana' [pink]

occidentale

[az] 'Brazil'

Rhodendron [az] 'Buttercup'

Rhodendron [az] 'Cannou's Double'

Rhodendron [az] 'Chetco'

Rhodendron [az] 'Clarice'

Rhodendron [az] 'Fireball'

Rhodendron [az] 'George Reynolds'

Rhodendron [az] 'Gibraltar'

Rhodendron [az] 'Golden Flair'

Rhodendron [az] 'Illans Red Gem'

Rhodendron [az] Klondyke'

Rhodendron [az] 'Medford Lenson'

Rhodendron [az] 'Ming'

Rhodendron [az] 'Pink Cascade' [on standard]

Rhodendron [az] 'Purple Splendor'

Rhodendron [az] 'Rufus'

Rhodendron [az] 'Umpqua Queen'

Rhus 'Autumn Amber'

Rhus aromatica

Rhus chinensis 'September Glory'

Ribes sanguineum 'Album'

Ribes sanguineum 'Album'

Ribes sinanensis Brookside 1671

Rosa 'Agrippina'

Rosa 'American Beauty'

Rosa 'American Beauty'

Rosa 'Champney's Pink Cluster'

Rosa 'Cramoisi Superieur'

Rosa 'Gen. Jacqueminst'

Rosa 'Golden Wings'

Rosa 'Gruss an Teplitz'

Rosa 'Hermosa'

Rosa 'Highway Pink Buttons'

Rosa 'Lady Hillingdon'

Rosa 'Louise Phillippe'

Rosa 'Mermaid'

Rosa 'Nastaina'

Rosa 'Natchitoches Noisette'

Rosa 'New Dawn'

Rosa Old Blush'

'Pam's Pink'

Rosa 'Slater's Crimson China'

Rosa 'White Pet'

Rosa brunonii

Rosa chinensis 'Mutabilis'

Rosa chinensis 'Viridiflora' ("green rose")

Rosa chinensis '=f. serratipetala

Rosa gymnocarpa

Rosa gymnocarpa

Rosa helenae NA 49456

Rosa laevigata ('Cherokee'

Rosa nitida

Rosa nutkana

Rosa palustris

Rosa roxburghii ('Chestnut')

Rosa rubrifolia

Rosa rubus NA 49461

Rosa spinosissimus 'Petite Pink'

Rosa stellata

Rosa villosa

Rosa webbiana

Rosa wichuraiana 'Hiawatha'

Rosa wichuraiana f. *poterifolia*

Rosa woodsii

Rosa woodsii 'Utah'

Rosa x *fortuniana*

Rubus calycinoides 'Emerald Carpet'

Rudbeckia laciniata var. *hortensia*

'Golden Glow'

Sabal minor

Sophora secundifolia

Spiraea japonica 'Fastigiata'

Spiraea nipponica 'Snow Mound'

Stachyurus chinensis 'Magie'

Stachys candida

Stachys densiflora

Stachyurus chinensis NA 49526

Stachyurus praecox

Stachyurus praecox 'Issai'

Stewartia malacodendron

Stewartia pteropetiolata

Stipa gigantea

Stranvaesia davidiana 'Fructu-luteo'

Stranvaesia niitakayamensis

Stranvinia 'RedStart'

Styrax hemsleyana

Styrax japonica 'Nana'

Styrax japonica 'Pendula'

Styrax texana

Symphandra wanneri

Synthyris reniformis

Synthyris stellata

Synthyris stellata 'Alba'

Salix anglorum var. *antiplasta*

Salix gracistyla

Salix gracistyla 'Variegata'

Salvia caespitosa

Sarcandra glabra

Saxifraga 'Carnival'

Saxifraga fortunei

Saxifraga x elizabethae

Saxifraga [variegated mossy spp.]

Saxigothaea conspicua

Schonenoplectus sp.

Sciadopitys verticillata

Selaginella sp. from Japan

Sequoia sempervirens

Seronea repens

Sinocalycanthus chinensis

Sisyrinchium douglasii

Sisyrinchium macounii 'Alba'

Skimmia japonica NA 45171

Smilax biflora

Solidago 'Golden Mosa'

Solidago 'Laurin'

Solidago spathulata 'Nana'

Syringa laciniata

Taiwania cryptomerioides

Taxodium murconatum

Taxus baccata 'Repandens'

Taxus sp.

Taxus x media 'Hatfieldii'

Taxus x media 'Viridis'

Telekia speciosa

Thalictrum coreanum

Thermopsis villosa

Thuja occidentalis

Thuja occidentalis 'George Peabody'

Thuja occidentalis 'Sherwood Frost'

Thuja occidentalis 'Sherwood Moss'

Thuja occidentalis 'Sudworth Gold'

Thuja plicata 'Canadian Gold'

Thuja plicata 'Cuprea'

Thuja plicata 'Hillieri'

Thuja plicata 'Hillieri'

Thuja plicata 'Rogersii'

Thymus cilicicus

Thymus doerfleri

Thymus doerfleri

Thymus membranaceus

Thymus pulegioides

tilia petiolaris

Trachelospermum asiaticum (pin/white varieg.)

Trichophorum caespitosum

Trillium grandiflorum 'Double'

Trochodendron aralioides

Tsuga canadensis 'Curly'

Tsuga chinensis

Tsuga dumosa

Tsusiophyllum tanakae

Typterygiium regelii

Typha minima

Ungandia speciosa

Vancouveria chrysantha

Vancouveria planipetala

Viburnum 'Ann Russell'

Viburnum carlesii 'Aurora'

Vi chinshanensis Coker

Vi corylifolium

Vi dilatatum (yellow-fruited)

Vi foetidum var. *rectangulare*

Vi luzonicum

Vi nudum 'Winterthur'

Vi odoratissimum 'Variegata'

Vinca major "oxyloba"

Vinca minor 'Albo-variegata'

Vinca minor 'Alpina Floreo-plena'

Vinca minor 'Bowles'

Vinca minor 'Gertrude Jekyll'

Vinca minor 'Gruner Teppich'

Vinca minor 'La Grave'

Viola adunca 'Alba'

Vitaliana primulaeflora var. *tridentata*

Washgintonia filifera

Weigela decora

Weigela hortensis NA 51344

Widdingtonia sp.

Xanthoceres sorbifolia

Yucca aloifolia

Yucca aloifolia 'Variegata'

Yucca carnerosana

Yucca elata

Yucca gloriosa 'Variegata'

Yucca rostrate

Zelkova serrata

Zizyphus jujuba