NC STATE UNIVERSITY

JC Raulston Arboretum

Friends of the Arboretum Newsletter

Number 17

December 1987

J. C. Raulston

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(My sincere special thanks to Mr. Bruce Mowrey, horticulture Ph.D. candidate graduate student - and computer whiz, who has transformed this newsletter at the last minute with incredible effort into new printing formats and methods for far greater polish than we've ever had before.)

COMING EVENTS

FEBRUARY 6-7 - CHARLOTTE CAMELLIA SOCIETY SPRING SHOW. To be held at South Park Mall, Charlotte, NC. Show chairpersons for contact - Susan & Walter Stone

(704-535-4115).

FEBRUARY 13 (SATURDAY) - GUILFORD HORTICULTURAL SOCIETY THIRD HORTICULTURAL SYMPOSIUM. This excellent program will feature three outstanding landscape plantsmen - Jim Wilson of PBS's Victory Garden; Norman Johnson - landscape architect and former garden editor for Southern Living Magazine; and Paul Calloway - noted historic garden restoration authority and designer. The program will be held at the Guilford Agricultural Extension Center, Greensboro, NC. For information contact Charles Bell (919-299-4681).

FEBRUARY 15 (MONDAY) - FRIENDS OF THE NCSU Arboretum (now the JC Raulston Arboretum) LECTURE AND SLIDE SHOW - MR. MARCO POLO STUFANO. Years ago Steve Wheaton at the Scott Arboretum of Swarthmore College repeatedly urged me to visit Wave Hill Gardens in New York as one of the finest plant oriented gardens in the country; later Christopher Lloyd in his visit of American gardens wrote about the garden in glowing terms in Horticulture magazine; and in 1986 I finally got to the garden for myself to see what these people and many others were raving about - and I could only agree it was stunning and wonderful. This fall I heard a second set of absolute rave reviews from plantsmen I greatly respect for a national symposium talk given by the director, Mr. Stufano who created the outstanding displays at Wave Hill. We are fortunate to have been able to convince (i.e. bribed by offers of thousands of cuttings and divisions from our collection) this noted plantsman to come for a visit of the gardens and plantsmen of N.C. and to give a talk to our membership. He will talk on AESTHETIC EXCELLENCE IN DESIGNING WITH PLANTS. Lecture at 8:00 PM, 3712 Bostian Hall, NCSU Campus. For those who cannot make an evening presentation - he will be presenting the same lecture to our students at 4:00 PM - Tuesday, Feb. 16 in room 159 Kilgore Hall. From the reviews I have had, this will likely be the most stunning slide presentation to ever be presented for our friends group. BE SURE TO ATTEND THIS WONDERFUL PROGRAM! (If in the New York City area - see the 28 acre garden at 675 West 252 St. [212-549-2055] - just north of Manhattan Island - accessible only by car).

FEBRUARY 20-21 WILSON CAMELLIA SHOW. To be held at Parkwood Mall, Wilson, NC. Show chairman for contact - Joe Austin (919-963-2735).

MARCH 1-2 - DAVIDSON HORTICULTURAL SYMPOSIUM IV. This outstanding program always features the very best of speakers and an electric atmosphere of learning and sharing. The program this year is entitled "Secrets of Site Design" and includes Gurdon Tarbok - director of Brookgreen Gardens; Hans Simon - renowned nurseryman from Germany; Ted Osmundson - San Francisco landscape

architect; Joseph Hudak - Boston landscape architect and writer; Allen Lacy - noted garden writer; and Bryce Lane - NCSU horticulture faculty - a superb lecturer and 1987 NCSU outstanding teaching award winner. Space is limited and this meeting is by reservation only since it always sells out far in advance to the disappointment of many who want to attend. Reserve early - registration is $28 from Davidson Horticultural Symposium, PO Box 1145, Davidson, NC 28036 (Mrs. Hubbard; 704-892-5266).

MARCH 4 (FRIDAY) - FRIENDS OF THE NCSU ARBOREUM LECTURE AND SLIDE SHOW - DR. HANS SIMON. In 1986 we had the pleasure of hearing this outstanding plantsman from Germany discussing ornamental grass at a friends lecture; and we are doubly blessed by his return visit following his lecture at the Davidson Symposium. He will lecture on PERENNIALS IN GERMAN GARDENS. Lecture at 8:00 PM, 159 Kilgore Hall NCSU Campus.

MARCH 5-6 - FAYETTEVILLE CAMELLIA CLUB SPRING SHOW. To be held at Cross Creek Mall, Fayetteville, NC. Show chairman for contact - Joe Austin (919-963-2735).

MARCH 5 (SATURDAY) AND REPEATED MARCH 6 (SUNDAY), 1988 - 2:00 PM TOUR GUIDES TRAINING SESSION - TONY AVENT TOUR. Our requests for guided tours of the arboretum increases each year and there is a very strong need for more people to volunteer to be guides. Guides receive manuals and a training program to prepare for this activity - and free friends membership as a small bonus. Many peop!e hesitate to even consider doing such an activity fearing they must be incredibly knowledgeable about all the plants in the arboretum. Such detailed knowledge is not necessary (I couldn't explain every plant there) - guides share information about the programs and mission of the arboretum - and some of the plant highlights. You chose the frequency of your tours, the times convenient to you, and the type of group you would feel most comfortable with - childrens groups, garden clubs, retirement communities, etc. If you enjoy the arboretum and its plants, and would like to share your enthusiam with those just discovering it - you are urged to consider sharing time in this voluntary guide program. For further information contact either Vivian Finkelstein (919-847-3658) or Suzanne Edney (919-469-1853)

MARCH 12-13 - MEN'S PIEDMONT CAMELLIA CLUB SPRING SHOW. To be held at Friendly Shopping Center, Greensboro, NC. Show chairman for contact - Lester Allen (919-299-2496).

MARCH 17 (THURSDAY) - FRIENDS OF THE NCSU Arboretum (now the JC Raulston Arboretum) SLIDE SHOW AND LECTURE - MS. EDITH EDDLEMAN. Anyone who knows of the arboretum at all knows about Edith and her nationally famous border, and people all over the country know her now as well as she jets about the country giving lectures at notable symposia. We are fortunate to squeeze in her tight schedule so locals can hear one of her wonderful talks on the world of perennials of which she is so extremely knowledgeable. Frequent lecturers (from my experience) often weary of requests for specific topics the speaker has often previously delivered - no matter how much you really like the topic or how good it is - and often yearn to talk on their favorite undiscussed subject. So I have left the topic wide open for Edith to have as much fun with as she likes - unquestionably it will be great! Meet in Kilgore 159 at 8:00 PM - NCSU Campus.

APRIL 9-10 (SATURDAY-SUNDAY) 9:00 AM - 3:00 PM (2:00 PM on Sunday) - PI ALPHA XI UNCOMMON PLANTS SALE. Pi Alpha Xi is the student honorary floriculture/ornamental horticulture society at NCSU. Each year they hold spring and fall plant sales to raise money to support a wide variety of educational activities they sponsor. In the past these sales have been held on campus but last year they tried holding the sale at The NCSU Arboretum (now the JC Raulston Arboretum) for better access and parking with great success. The sale will be at the arboretum again this spring. To not compete with normal local markets and to emphasize the educational/promotional aspect of the sale - the students actively hunt out rare and uncommon fine landscape plant from nurseries across the state to feature - and offer much useful advice on culture and use of the plants for customers. Come support this most worthy activity (THIS IS NOT A SALE BY THE NCSU Arboretum (now the JC Raulston Arboretum) ORGANIZATION - WE NEVER SELL PLANTS FROM THE UNIVERSITY)

APRIL 15.16. AND 17 (FRIDAY-SUNDAY) - MEN'S GARDEN CLUB OF WAKE COUNTY SPRING AZALEA SALE. The Men's Garden Club is now the largest such club in the U. S. and contributes enormously to the horticulture of this area in so many ways - including sponsorship of the horticultural exhibits at the state fair each fall. Funds for their public programs are raised in a variety of ways and this sale is a major contributor. To expand the range of knowledge of fine plants beyond the few common varieties seen everywhere in mass markets - they have sought out sources for over 85 different varieties of azaleas which will be on sale. Included will be one I have long promoted for greater use as a fine groundcover for our area - 'Pink Cascade' - a low-growing/creeping evergreen azalea which will reach a height of 1' and spread to 5' in width with time - wonderful. They have gambled a bit and ordered a large quantity of this cultivar from out-of-state which cannot be returned - so I hope all will help them out by purchasing and spreading the use of this fine plant - you won't find it for sale here often. The sale is at the state fairground flower show area. For further information call Tony Avent at 733-2720 or 832-9296.

< programs and mission of the arboretum - and some of the plant highlights. You chose the frequency of your tours, the times convenient to you, and the type of group you would feel most comfortable with - childrens groups, garden clubs, retirement communities, etc. If you enjoy the arboretum and its plants, and would like to share your enthusiam with those just discovering it - you are urged to consider sharing time in this voluntary guide program. For further information contact eitheility to run circles around anyone. While simultaneously teaching 5 horticulture courses at the college, running 3 commercial businesses, building a new home, and balancing family life - he conceived and designed a campus-wide public garden and arboretum - and in less than a month raised all the funds needed for complete construction (twice the total funds we've ralsed here in ten years - in one month!). Just one year later all the gardens were installed through his efforts - arboretum, rose garden, pool and fountain displays, Japanese garden, native wildflowers garden, fruit & vegetable garden, azalea garden, garden for the blind, etc. - on and on and on - an amazing accomplishment since

supplemented by further fund-raising to fully endow the gardens for future operations. Come meet this dynamic individual, hear the story of the garden development and see his movie on this accomplishment. The presentation will be at 8:00 PM, 159 Kilgore Hall, NCSU Campus. If in the northwest section of thc state be certain to visit the beautiful campus and gardens.

FALL 1988 - ROUGHLY OCTOBER 17-NOVEMBER 14 - THE NCSU Arboretum (now the JC Raulston Arboretum) NURSERY/LANDSCAPE TOUR OF AUSTRALIA/NEW ZEALAND. Final arrangements are being made with a travel agency on plans for this trip in planning for several months. Two options will be available for participants. An early departure will be available for those who would like to attend the Australia/New Zealand chapter of the International Plant Propagators Society meeting in Auckland, NZ. Others will depart several days later and the two groups will meet and travel throughout the two countries for the next 24 days visiting nurseries, public and private gardens, natural scenic areas, city landscaping, and the Australia world's fair in Brisbane. For information on itinerary, costs, and reservation techniques - write to: Australia/New Zealand Tour, The NCSU Arboretum (now the JC Raulston Arboretum), Dept. of Hort. Sci., Box 7609, NCSU, Raleigh, NC 27695-7609.

NOTES FROM THE ARBORETUM:

PEOPLE: Several new people are now part of The NCSU Arboretum (now the JC Raulston Arboretum) program since the last newsletter. Mr. Paul Lineberger has been appointed as the new superintendent of the university farm where the arboretum is located. Mr. Lineberger was the superintendent for the horticulture department greenhouses behind Kilgore Hall, and before that he was a technican with Dr. Blankenship involved in post-harvest physiology research. He has great personal interest in the arboretum and his obvious active support and involvement since taking over the position is most sincerely appreciated - we look forward to many years of working with Paul in the future. At the greenhouses, Ms. Beth Thorne has been selected as the new superintendent for the complex to replace Paul. Beth has been a floriculture technican for Dr. Roy Larson. Incidentally, Dr. Larson was seriously stricken ill with a blood clot while in Denmark on sabbatic leave this fall and was rushed back to Raleigh for hospitalization. He was in critical condition for some weeks but we are delighted that his recovery has gone well with his return to the office in December. Dr. Larson is currently serving as president of the American Society of Horticultural Science - the first time this prestigous office has been held by a NCSU faculty member.

Our secretary, Judy Johnson, who has handled the arboretum correspondence, newsletter, and phone inquiries for several years, left this fall for a higher paying position in another office on the NCSU Campus. Ms. Johnson was a tireless and very effective worker who somehow managed to handle the disorganized chaotic mess created by me in a manner which made the work appear highly professional and organized as it left her office. It was a treat to work with Judy and we will miss her greatly. On the good news side - after two months of hunting for another super secretary (and the unending complex paperwork battle to do anything in the university system) - we are delighted to have Ms. Ellen Cawthorne as our new arboretum secretary. She comes to us with excellent credentials from years of secretarial experience and has quickly mastered the numerous new systems in our office for effective and efficient service. She faces the daunting task of handling my mail and correspondence during the year of absence coming up - but it is apparent after only a few weeks in the office that she is more than capable of the task. (Not to mention - also handling all the work of 3 other faculty as well). Many of you will talk to her in the future (737-3132) or receive the correspondence she coordinates - and you will find her friendly personable help a delight, and her professional skills highly effective. Ellen - we welcome you and look forward to many years of working together. I want to also take this opportunity to thank secretary Kathy Neely who handled all my work during the transition - and for her active involvement for several years in willingly stepping in and helping my secretaries with the arboretum work during the pressured crisis times (which occur about 7 times a day it seems). Kathy keeps us all sane with her "wild and crazy" (and wonderful) view of life - and irreverent puncturing of our academic pomposity.

In the last newsletter I covered the many personnel changes within the faculty of the department - and will make several comments about present status of these positions for the many former graduates across the country who have inquired about our progress in hiring. Within universities today - it is a long complicated process with many steps to meet all the federal and state requirements. On the department head position - we are through the job announcement and initial candidate screening process. The three final candidates are interviewing in the department at this time - and hopefully by early spring we will complete the hiring process. Dr. Bilderback's position cannot be filled until a new department head is present. During this fall, I have taught his course - but my study leave absence over the coming year makes my further covering of his position impossible. We feel very fortunate to have been able to contract with Mr. Robert Hayter, formerly at Sandhills Community College, to cover our grounds maintenance and nursery production courses during the coming year. Robert is one of the finest teachers I have ever encountered; and his extensive professional nursery and contracting experience will give our students the very best of training during this transition period.

We are delighted to have another active volunteer come on board at the arboretum - or more realistically to have him add another set of responsibilities to previous ones. Everyone in the Triangle area horticultural circles unquestionably knows Tony Avent - superintendent of grounds at the state fair grounds, active member of the Men's Garden Club of Wake County (now the largest men's garden club in America!), lecturer, newspaper columnist, and private gardener extraordinary (he welcomes visitors to stop by and tour his tiny home yard at 110 Dixie Trail - which to me has more interesting plants than many of the huge public gardens I visit). Tony has long been active in support of the arboretum and active with the volunteer tour guide program over the past year, He is joining forces with another of our longtime incredible plantsmen volunteers - Mrs. M. K. Ramm - to create a team for management of the lathhouse collection and display that will be dynamite in impact. More about their efforts in the next section - but we are delighted to have you in this new role Tony. (And of course, we appreciate your continuing super work M. K.)

Also in the volunteer world developments - Vivian Finkelstein who has been so active in the tour guide proqram for several years is taking over as coordinator of training for the tour program to take some of the pressure off Suzanne Edney as her design business and the groundcovers plaza work have increased in time requirements. (The Raleigh News & Observer newspaper had a fine article about Suzanne and her design business in the Wednesday, September 9 issue, p. 9A) Vivian is actively looking for volunteers to help with the guide program and those interested in helping in this program can contact her at 847-3658 or at 3601 Charterhouse Dr., Raleigh, NC 27612. As stated earlier, the number of groups and schools requesting tours of the arboretum is dramatically increasing each year and we very much need more help to continue and expand handling of our many visitors. Many thanks to our current active group of guides - Mary Edith Alexander, Tony Avent, Wayne Brooke, Tom Bumgarner, Suzanne Edney, Vivian Finkelstein, Tom Foley, Lois McLeod, Joanne McMenamin, Tiz Metcalfe, Sarah Moore, Beverly Norwood, John Penkacik, Jack Reichard, Sallie Ricks, Artie Schronce, Jewell Seymour, Bobby Wilder, Bill Willis, and Nancy Wood.

Others who I want to acknowledge here would include those who stepped in and helped us carry off hosting the national meeting of the American Conifer Society in August so successfully. There is no way we could have done it without the many efforts of Bob Wilder, Sarah Moore, Wayne Brooke, Doug Champion, Susan Suggs, Larry Hatch, and Newell Hancock. We also appreciate the time and effort made by our outstanding speakers; Tracy Traer, Larry Hatch, Jim Cross, Ann Stomp, Sue Martin, Farrell Wise, and Tony Avent in preparing and delivering their excellent presentations. In addition, the conference and post-conference tours were a great success due to the kindness and generosity of hosts at Duke Gardens, UNC Botanic Garden & Coker Arboretum, Montrose Nursery, Tom Krenitsky (private garden), Charles Keith (private garden), Yadkin Valley Nursery, We-Du Nursery, The Biltmore Estate, Washington Evergreen Nursery, and Holbrook Farms Nursery. Hosting the convention was a major effort for the arboretum, but like having a large party at home - it forces a great amount of cleanup and preparation which would never occur without the stimulus of wanting to have everything "right" for the guests. We polished the arboretum all summer - weeding, pruning, moving of plants, relabeling all the conifers and assembly of our first complete listing of them (included later in this issue) - only during the visit of the American Rock Garden Society several years ago has it looked so good. We enjoyed our guests from across the U.S. and thank all who helped.

DEVELOPMENTS: The arboretum change of the last several months which likely will have the greatest long term impact is one which is totally invisible to the public. Since the arboretum was first started, water supply for irrigation has been a concern. The city water we have access to (and use in droughts) is too expensive for routine large-scale watering; and the farm pond supply becomes limited during severe droughts when we most need it. This summer several wells were drilled on the farm to try to remedy this problem. They went back to a deep bone dry hole which had been drilled in 1977 when we began the arboretum - and with only another 20 feet of drilling they hit an abundant supply of water which will handle all our needs for the future. Painful to realize we were so close to water at the very beginning so long ago - but we are overjoyed to finally solve the problem.

Although little structural construction has occured in the arboretum in recent months, dramatic changes have occured which would surprise anyone who has not been in the garden recently. We were excited to have the unexpected opportunity to move six specimen plants in the arboretum thanks to the generosity of Dogwood Acres Landscaping & Nursery in Fayetteville who donated a labor crew and the use of their Big John tree spade for a full day of productive work. Four large specimens (12-18' tall) of the 35 year old dwarf loblolly pines in our nursery were moved to frame the central walkway of the annuals area - with two trees at the model gardens area and two across from the entrance to the lathhouse. As one looks toward the lathhouse from the walkway by the French parterre the four trees now beautifully define the area. At the north end of the Japanese zen garden a 15' 'Yoshino' cryptomeria and a 12' 'Calina' holly were moved in to screen the farm buildings from the exit area of the oriental gardens. After very carefully plotting all the underground utilities on our farm map - we only punctured three water lines while putting in the six plants. What agony! The Dogwood Acres crew were most patient with our bloopers and worked diligently all day (even skipping lunch) as they delicately maneuvered the huge machine in and out of tight locations on the farm. Our sincere thanks for this most generous industry support.

Later in November I was able to use the B&B and plant moving laboratory of my nursery production classes to move plants throughout the arboretum. Ninety students times a two hour lab gives 180 people-hours of effort and we were able to clear most of the larger plants from the lathhouse and move them to positions throughout the arboretum; and continue our rearrangement and consolidation of collections. Earlier in the fall, the 20-year-old, outdated and disease susceptible crab apples at the southeast corner of the farm were chainsawed to the ground to reveal the young three year old planting of newer and better crab apple cultivars back by the 'Nellie Stevens' holly hedge. The tree of 'Callaway' was saved as it is still probably the finest crabapple cultivar for the south, and our specimen is one of the largest in existance as it was quite a new cultivar when planted here. The euonymus collection also there was obscenely decimated and had become the world memorial scale collection - so we eliminated those plants as well. This newly opened area has now been planted with nine different Corylopsis which had been scattered throughout the arboretum. Hydrangea, Cedrus, Acer, Magnolia and a variety of other plants have already filled the newly cleared space. The nursery labs also helped our clearing of the nursery as hundreds of container plants were installed in the arboretum including about 25 new Magnolia to the magnolia plaza already packed with plants - and also planting of thousands of new bulbs donated by Pi Alpha Xi; and the many new Narcissus cultivars acquired to expand our already large collection. In addition, our one acre arboretum field nursery at the back of the farm (which visitors never or rarely see) was cleared of all old overgrown plants, tilled thoroughly and fumigated by the farm crews; and the nursery labs filled it with plantings of the Korean collection plants for future observations as the plants grow. In sum - over the last month some 700+ trees and shrubs have been rearranged around the arboretum and nurseries; so many of your familiar friends may no longer be where you expect them - and there will be many new residents to get acquainted with. As just one example, next summer the new block of eight species of 4-12' tall Stewartia plants installed in the Viburnum collection should be a popular favorite with visitors.

Most dramatic will be the changes in the lathhouse as M. K. and Tony have embarked on a complete renovation of the 1982-84 plantings which had vigorously overgrown the house filled with over 1,500 different plants. Bed by bed they are removing the old plants, adding huge quantities of new bark and gravel tilled in together, and replanting after grouping plants for better collection display. At times it is like an archelogical dig finding layers of forgotten plants buried under the surface layers - many surprising treasures were rediscovered during this process. It is amazing just how many remarkable plants are in this one house. Among other things they've discovered 25 different named cultivars of mountain laurel, Kalmia latifolia, which are now planted at the back of beds as backdrop to srnaller front planting. The first bed to be completed was the south bed which now contains the Kalmia and a collection of the finest 50 cultivars of Hosta recommended and partially donated by the Hosta Society. The north bed has also been redone and the fern collection of over 50 species and cultivars will be spectacular and more useful next year. Tony has manually wheelbarrowed and shoveled into place some 65 cubic yards of bark and 6 cubic yards of gravel! During the Thanksgiving "break" he organized a group of volunteers to finish the media change and took on another proiect of building interior fences inside the lathhouse to create a series of "rooms" to heighten the explore/discover experience of the house. This group of hard-working individuals included Wayne Brooke, Tom Bumgarner, Phil Danielle, Edith Eddleman, Vivian Finkelstein, George Griffing, Tom Krenitsky, Bruce Mowrey, Beverly Norwood, M. K. Ramm, Jack Reichard, Doug Ruhren, Barbara Scott, Ralph Shaw, and Cornelius Swart. By Christmas most of the other beds will also be redeveloped, mapped, and relabeled. On your next visit to the arboretum - don't miss the "all-new" lathhouse display. Thanks Tony and M. K. for a truly monumental effort!

Also on the near future schedule is the removal of the entire planting of old hybrid tea roses south of the annuals for planting of a new collection of recent cultivars next spring. The existing turf plots will also be relocated this winter to the back half of the rose area adjacent to the holly hedge. With the removal of the turf cultivars from their present location, Edith Eddleman can finally install the long-awaited Elizabeth Lawrence perennial border with many plants from Miss Lawrence's gardens both in Charlotte and Raleigh.

A small beginning has been made on the long critical need for better labels in the arboretum. The first 250 metal imprinted labels prepared by the N. C. Botanical Garden in Chapel Hill arrived in August and can be seen in several areas of the arboretum - particularly on the parking lot plants. Thc labels are brown anodized aluminum with seven lines of information - including family, genera and species, variety or cultivar, native country or place of origin, an information statement about the plant (e.g. - purple flowers in May), and source and year of acquisition. As time permits to formulate label information for othor plants, more will be manufactured and installed. Thanks to Charlotte Jones-Roe and the N. C. Botanical Garden for their help in this project.

A last project before heading off on my year of leave has been to complete a mapping and recording of all the plants in the arboretum for three main reasons. It has been my longest goal to someday have a record located so a visitor can know what is in the collection and where the plants are located - and hopefully by summer a book with all this data will be mounted in the visitor center available for everyone to use. Also the identity of so many things exists only in my mind and a better record is needed for a successor just in case I should try to swim the Pacific with an airplane on my back; and I need such a list to check against as I hunt plants around the world to not go to great expense and effort to bring back a plant which may be three feet from the entrance. I still laugh (with embarassment at my poor knowledge of plants) and remember the effort years ago to lug back a 6' Cornus alternifolia by plane from Seattle, and then discovering it is native to N.C. and growing in the woods nearby! It has been astonishing to see just how diverse and how much is included in the collection as each bed is added to the collective list. Plans are to print this list as the next issue (#18) of the newsletter if I can figure the logistics of how to handle nearly 6,000 entries in a manageable format.

Another new feature of the arboretum is a trail network of ten bluebird houses and two chickadee houses built and donated to the arboretum by Dr. G. W. Griffing of Raleigh. We received our first bluebird house from Mr. Jack Finch of Finch's Blueberry Nursery several years ago and this year we had two hatches of bluebirds in it. With the numerous new bluebird houses which will be added to the arboretum, our already abundant bird population should become even more interesting to visitors. In a letter from Dr. Griffing, he explained the nesting procedure which was completely new to me - "The male bluebird will begin examining possible nesting sites about the first of February. About the first of April, the female bluebird will make a choice of 4 or 5 possible sites selected by the male. Since many of the plantings at the arboretum retain their berries during the winter, the arboretum should attract the bluebirds which eat mostly berries during the winter. If 4 or 5 boxes are used for nests the first year, the nesting season would be considered very good." Dr. Griffing also has plans to add martin houses in the future. "Birders" should visit the arboretum just at dawn sometime (the gate is open) - an amazing number and variety of birds are present and singing up a storm. The goldfinches flitting about the Coreopsis x 'Sunray' and the multitude of hummingbirds in the Monarda are a delight to behold. Thanks Dr. Griffing for bringing us more bluebirds!

PLANTS: Again, there are so many plants that could be commented on - but just a brief selection on ones not mentioned before to whet your appetite for further exploration of the arboretum. Plants in the far west arboretum unfortunately have few visitors as most people are plant saturated (the "glazed museum visitor syndrome" after just finishing 600 paintings in an hour) by the time they stagger out of the Japanese garden having covered four acres and 3,500 plants from the entrance. But there are many wonderful treasures in the new western plantings to discover and I would recommend an alternate visit scheme for long-time frequent visitors - from the white garden, cut directly through the holly hedge and go between the two farm buildings directly to the west arboretum. You'll hit the west arboretum fresh for a change and at the end of exploring that area you can go through the Japanese garden and lathhouse in reverse direction and as a result you'll see plants you've never noticed before.

A plant which is the fastest growing tree in our collection has reached the size to be noticed more and more each year. Pterocarya stenoptera, Chinese wingnut, is a member of the walnut family introduced to the west in 1860 and widely planted as a park tree in Asia and Europe. In three years from seed our tree has reached 28' in height with a 14" diameter trunk! The compound foliage is over a foot in

length and it fruited this year for the first time with pendulous chains of attractive green maple-like seeds which stay for several months with great ornamental beauty. It is a bit hard to handle in commercial nursery production as it outgrows any container almost immediately with its incredible growth rate, and could only be handled in field production for several years. It also grows to be a huge tree so would not be suitable for typical street/sidewalk use or for the average home property. For public parks and large commercial corporate landscapes it should have excellent potential considering its great success in this role in other nations. Our tree is in the west arboretum near the large oak with the swing.

Another west arboretum plant "discovered" by a number of visitors this summer is in the Abelia collection in the farthest west bed by the bamboo and poplar screening trees. Today Abelia X 'Grandiflora' and its cultivars totally dominate the commercial field for this genera. This hybrid was created by a cross of the species A. chinensis X uniflora in 1886. But several visitors have become interested in the A. chinensis species as it flowers over a very long period in summer and the dried flower bracts remain on the plant in an ornamental fashion - plus, the flowers are quite fragrant - a feature lost in the hybrid. Several growers have taken cuttings - which root very easily - and hopefully this plant which is totally unavailable in the commercial trade in the U.S. may find a small specialized production niche. With our rush to evergreen species and cultivars to dominate our landscapes in the last fifty years - we often left behind other special characteristics which still make the deciduous materials worthy of mixing into a planting. In the south in particular - the almost universal sameness of total evergreen plantings (though beautiful) cries out for relief with some deciduous materials to add seasonal variety. And we can always use more fragrance in the garden.

In the far south-west corner near the Abelia collection - the visitor will also find our collection of deciduous gymnosperms ("conifers") planted together for teaching comparisons. Most people assume all gymnosperms (pines, spruces, junipers, firs, etc.) are evergreen but six genera drop their foliage each winter. More will be written about this group in a separate article in the future - but for now I will only mention that the visitor can find the following in this planting: Ginkgo biloba - the maidenhair tree; Glyptostrobus lineatus - the Canton water pine; Metasequoia glyptostroboides and the cultivar 'Sheridan Spire' - the dawn redwood; Pseudolarix amabilis - the golden larch; and the bald cypresses Taxodium ascendens (pond cypress),

T. distichum (bald cypress), and T. mucronulatum (Mexican bald cypress) all growing side by side. The only deciduous conifers we cannot grow successfully are the larches (Larix species) which root rot in our high temperatures and poorly drained soils. We manage to keep one alive in the bark beds of the lathhouse - but definitely not adapted here.

Another "category" collection of plants of interest to visitors and collectors is not far away as one heads back up the hill toward the Japanese garden on the right hand side of the south pathway. We have planted together a wide variety of plants which have contorted or twisted branches. These plants are particularly noticable in winter when leaves drop and expose the form of the branches. Probably the most common such plant seen in commercial trade is the Harry Lauder's walking stick bush - Corylus avellana 'Contorta' which was first discovered in 1863 in Gloucestershire, England. Our plant of this cultivar is located just to the left of the visitor center entrance between the chainlink fence and the entrance path.

Other contorted plants on display in the west arboretum include a whole group of willows: Salix x 'Golden Curls' - a golden barked, weeping and corkscrew hybrid which resulted from a cross of the golden weeping willow, Salix alba 'Tristis'- (also listed as Salix alba 'Vitellina Pendula') times Salix matsudana 'Tortuosa' - the corkscrew willow with contorted limbs (Whew!!); Salix x erythroflexuosa (Salix alba 'Tristis' x matsudana 'Tortuosa' - originally found in Argentina in 1971 and brought to the U.S. in 1972) with golden-barked, twisting and weeping branches much like 'Golden Curls', but with twisted and curled foliage; and Salix babylonica 'Crispa' - the ram's-horn willow which has weeping branches and individual leaves which curl like a ram's horn (from Belgium in 1827). I'm waiting for someone to hybridize 'Golden Curls' with the ram's horn and create a cultivar with curling leaves on limbs wnich are weeping, contorted, and golden barked - Tracy would certainly call it the ultimate "sickie" plant - all it needs is to be dwarf and variegated as well! A challenge for the future.

A "newcomer" contorted willow which looks promising is Salix X 'Scarlet Curls' - planted in the far northeast corner of the arboretum next to the large corkscrew willow, S. matsudana 'Tortuosa'. Apparently brand new in the trade and I have not been able to trace anything on origin (or even find any reference in any of my literature) but it has the same weeping and contorted limbs as 'Golden Curls' except with red bark instead of the gold - so it may have originated as a sport branch mutation of that cultivar. It could be absolutely spectacular planted on the south side of a white or light grey wall as a winter accent.

Other contorted plants in the collection in the west arboretum include:

Chaenomeles speciosa 'Contorta' - the contorted flowering quince with white and pink flowers (a Japanese cultivar originally named 'Rinho' - imported to the U.S. in 1929).

Prunus mume 'Contorta' - the slow-growing contorted Japanese flowering apricot with white winter blooms.

Poncirus trifoliata 'Flying Dragon' - a Japanese contorted cultivar of hardy orange with bright green twisting stems, sharply curved thorns, and white flowers in spring.

Morus bombycis 'Unryu' - a rare and very old contorted mulberry cultivar from China which is probably the most vigorous growing of the group with up to 6-8' of growth a year and spectacular winter appearance.

The only contorted conifer in the group is X Cupressocyparis leylandii 'Contorta' (often listed as Cupressus macrocarpa 'Contorta'). The contorted Leyland cypress is particularly interesting as conifers alone (only some - not all) have the ability to produce "reaction wood" and change the shape of branches originally laid down. The young branches are wildly contorted at times - completely corkscrew in form and doubling back on themselves (only with strong vigorous growth - slow annual growth produces little twisting) - but in subsequent years the growth slowly straightens out to completely normal form on older branches. A second plant of contorted Leyland is found at the south end of the parking lot to the east of the roadway gate going back into the farm. To propagate the plant any terminal can be used for cuttings - it is not necessary to have wood which exhibits twisted growth.

At this time in late November after most autumn color displays are gone, most gardeners assume that color is finished for the year. But a walk in the arboretum on a drizzly Thanksgiving day turned up many beauties to admire. Quercus serrata was still in leaf with the most brilliant red foliage seen on any tree this fall - surprising on an oak. Earlier the foliage on our two newly installed rare Nyssa sinensis trees (grown from Chinese seed) was a spectacular orange-red color and the plants should be stunning as they age. In container production they were extremely fast growing with over 4' of growth and a 1" caliper trunk in only one year from seed. Another new plant to me from our Chinese seed trials was Alniphyllum fortunei which also had excellent red fall color. According to Krussman, this member of the styrax family should definitely be hardy here and could be a most useful new tree to our landscape with white flowers, handsome foliage, and good fall color. It grew 3-4' in a year in container culture.

Prunus mume 'Tojibai' is in full bloom now, two months ahead of normal with white, intensely fragrant flowers. Also flowering with white fragrant flowers are various species and cultivars of Osmanthus scattered throughout the arboretum. And after the earlier array of a number of many different Colchicum and Crocus bulb species and cultivars in various plantings - the tiny, white-flowered Crocus ochroleucus is bravely making its lone stand at the front of the lathhouse with a barrage of flowers.

The collection of deciduous hollies is finally to the age when the vigorous vegetative growth of young plants has slowed to the point to allow good flowering and fruiting for the first year. Most of the 16 cultivars are beautiful but the largest fruited ones are Ilex verticillata 'Winter Red' and 'Jolly Red' with some of the shiny deep red fruit a third of an inch in diameter. Our collection of Nandina shows the wide range in fruit color of this group from the "white" (creamy-yellow) of 'Alba' to the deep red of 'Moyer's Red' which colors much earlier than any other cultivar. Incidentally - when the plants are grown from seed - future fruit color of the seedlings can be fairly accurately determined by the pigment in the basal stem of the newly germinated seed - with the white-fruited types showing pale yellowish green stems, the red ones with dark to reddish-green stems (taught to me by nurseryman Stephen Burns who grew populations of seedlings from our plants). And once again - as every year - perhaps the most spectacular fruit display in the arboretum is the Aronia arbutifolia 'Brilliantissima' - the improved red chokecherry. I also saw it in spectacular display this fall at the Chicago Botanic Garden and really don't understand its lack of widespread commercial use in the U.S. One grower told me this summer he dropped it from production because it grew too vigorously in his nursery and besides, no one ever asked for it!? Commercial success is a continuing mystery with little relationship to plant qualities in so many cases.

In the new planting of crabapples at the southeast corner of the arboretum (mentioned earlier above) - a wide variety of fruit sizes and colors are on display among the seventeen cultivars. But the one which stands out most dramatically with the backlighting of sun against the shaded black-green foliage color of the Ilex X 'Nellie Stevens' holly is the brilliant yellow-gold of Malus X 'Harvest Gold'. It is showy now and should be absolutely spectacular as the tree grows larger.

Only one last group of plants will be mentioned for winter color - the colored bark plants. These are scattered about the arboretum and a quick walk yielded the following list of plants with notable bark color (peeling, winged, etc. will be another future story): Salix alba 'Chermesina' with orange bark; Salix alba 'Vitellina' with brilliant red bark (received by us under wrong name as the the cultivar has clear yellow bark); Acer palmatum 'Sango Kaku' - the common "coral-bark" Japanese maple and 'Beni Kawa' which has even more brilliant red bark; Acer stachyophyllum - with orange-red bark; Acer davidii with white stripes on green background; Euschapis japonica - a new plant from our Korean expedition with beautiful delicate patterning of white lines on purple background; Cornus controversa - with dark red to purple bark; Phyllostachys nigra - the "black bamboo" with purplish/black older canes (and wonderful in combination with the white-edged leaves of the Sasa veitchii bamboo it is interplanted with); Prunus serrula - the paperbark cherry with mahogany-red bark; Firmiana simplex - the Japanese parasol tree with its emerald green bark; Kerria japonica cultivars - also with green bark; Rubus cockburnianus - with white/purplish grey bark; Betula nigra 'Heritage' and B. jacquemontii - with their white bark; and Cornus stolonifera 'Flaviramea' - with bright yellow branches.

TRAVEL NOTES

This issue will initiate a new feature section of the newsletter which has been under consideration for some time. So much of my time is spent traveling - and so many people, places, plants, etc. are experienced during these trips that I so much want to share with our membership. In the past this has been done primarily in the slide lecture - but few people are able to attend those meetings and our membership is increasingly expanding and scattering all over the country. It seems especially appropriate to begin such a column now as I prepare to depart on a year of study leave travel all over the world - the 1988 newsletters will be sent back from diverse locations to share the hopefully wonderful sights and experiences to be encountered.

This first entry will be relatively brief due to constraints in time and space available in the newsletter. In travel one of the things I am always looking for is nurseries carrying a range of uncommon plants unusual for their given region of the country - difficult to find, but exciting and rewarding when discovered. For those who travel across the country I have three such firms new to me this year - super

people and wonderful plants. Two are retail only to travelers in those areas - no mailorder or shipping available; and one is a wholesale firm.

On the west side of St. Louis, MO is a remarkable nursery with an enormous and diverse range of plants mixed with a strange funky blend of animals in cages, scarecrows, sculpture, and landscape contracting equipment and crews. The firm is Minner Nursery, 12745 Mason Manor Road (just a few blocks off the beltway - 3/4 mile South of Olive on Mason), Creve Coeur, MO 63141 (314-576-5697). I saw a dozen rare things I wanted but the plants were too large to consider trying to get on the plane coming back. While in St. Louis one must also not miss the St. Louis Botanic Garden of course - the oldest botanic garden in the U.S. and greatly transformed since my last visit with huge new visitors center, new perennials displays, new arbor and vine area, etc.

The St. Louis Center (interior mall) downtown is quite stunning and the St. Louis Gateway Arch is unique and a remarkable experience to visit (Be sure to see the film detailing its construction). It was good to see how the monument landscaping is maturing and transforming the site so well - and the transformation of the city itself in recent years - much urban renovation in the beautiful old buildings downtown and a whole different positive feeling from my last visit when the city was definitely down and out for a time. Sculpture is an especial love of mine - and a visitor to the area should hunt out the Laumeier Sculpture Park - a 96 acre park with large numbers of contemporary landscape sculpture. Located near I-240 and I-44 in southwest St. Louis.

On the same trip to St. Louis, I visited Memphis, TN and had the pleasure of visiting the revitalized and dynamic Memphis Botanical Garden which is entering a revolutionary phase of development with a new master plan and great enthusiasm among its members and staff. The German iris were in full bloom - and as always when I see them like that I want to have at least an acre of a few thousand cultivars to enjoy at home - such spectacular plants with all the hybridizers are doing these days. I would love to see their old planting of many huge deciduous magnolias in bloom in early spring - seemed the most impressive mass planting of this genera I've seen in any American garden - and a wonderful collection for them to supplement with more and newer cultivars to bccome a national resource.

A special treat while in Memphis was to see one of the outstanding garden centers of the country and meet the Plato Touliatos family who do such a magnificent job at "Trees By Touliatos" - 2020 Brooks Rd., Memphis, TN 38116 (901-345-7361). Located right at the Memphis Airport (schedule a couple hours layover at the airport sometime in your cross-country travel and walk over to see it). A fantastic display of uncommon plants, the most gracious and hospitable people imaginable, and innovation everywhere from the solar houses, plantings in rooftop soil layers, landscape idea displays, information signs, etc. - wonderful, wonderful. They put out a customer newsletter which is more interesting and informative than most trade publications I read - full of good observations, plant comparisons, uses, etc. I was particularly taken by their purple-foliaged Quercus nuttallii seedlings in the nursery - which maintain their color well through the summer even in the heat of the south - rare for most purple-foliaged plants and they must be amazing if planted in cooler climates. They very graciously gave me a number of plants which will be on display in the arboretum here next summer. Worth a long drive to Memphis just to see this place and the people. Who cares about Graceland with such a garden center around?

On a crazy and fast trip to Denver to lecture this spring (a long and complex story - forgetting my schedule, missing two flights, flying out, staying 3 hours including a lecture, and return the same day!) I learned of but did not get to visit what must be one of the finest wholesale nursery for uncommon plants in the Plains/Mid-Mountain area of the U.S. The firm of Little Valley Nursery, 13022 E. 136th Ave., Brighton, CO 80601 (303-659-6708) carries an amazing variety of new, unusual, and choice plants which they supply to garden centers of the area. It was a treat to browse through their booth display at the Colorado Nurserymen's Trade Show and get a copy of their extensive listings. They also publish an outstanding newletter with comments about plants in their trials and recommendations for garden centers on how to sell and use them. I've been fascinated by descriptions of two new Penstemons introduced by the University of Nebraska which should be great garden perennials - P. digitalis 'Husker's Red' with red foliage and white flowers; and P. barbatus 'Schooley's Yellow' a rare form with rare yellow flowers and lengthy bloom period.

Back in my early planning for a year of off-campus scholarly ("sabbatic" - sic) leave, it all seemed so simple - take some years of saving out of the stock market in January - go to England and visit as many of the fine gardens and nurseries as possible. What a change just a couple of months can make in plans! In rapid succession the stock market took its little hiccup, and on October 16 English gardens were devastated. Although there were brief reports in the newspapers here about the storm - we are just now beginning to get the full story of the total impact on the magnificent gardens there as they struggle to clear the damage in the areas hit.

The Director of Kew recently stated that only about one-third of the garden was open to the public as they worked to remove some 2,000 mature trees which were destroyed or will have to be cut because of damage - some 10% of their total. At Wisley - some 40% of the large trees were destroyed and many areas will not be open for some time. Perhaps the worst hit of major gardens was Wakehurst ("Kew in the Country") - there the staff cannot even get to the garden because the public highways are still blocked from fallen trees throughout the area - but aerial surveillance by helicopter indicates over 50% of the trees are down and will take years to clear. The damage is so extensive throughout southern England that there are not enough trained arborists to even begin to manage the cleanup that will be necessary. Several American gardens are sending funds and workers to England to assist as possible. Contributions can be made by sending a check to the Relief Fund for English Gardens, Massachusetts Horticultural Society, Horticultural Hall, 300 Massachusetts Avenue, Boston, MA 02115.

Once again my favorite quote from Henry Mitchell's wonderful book "The Essential Earthman" proves true: "It is not nice to garden anywhere - everywhere there are violent winds, startling once-per-five-centuries floods, unprecedented droughts, record-setting freezes, abusive and blasting heats never known before. There is no place, no garden, where these terrible things do not drive gardeners mad....

Wherever humans garden magnificently, there are magnificent heartbreaks.... The cost of cleanup is too grim to dwell on, but even worse is the loss of not mere lousy Norway maples, but of rare cherished specimens that were a wonder to see."

A brief note for those curious about my final plans for the year away. My scheduled departure in January was delayed until February, but I will fly to Paris to pick up a car for 6 months use in extensive traveling throughout Europe - Greece to Ireland and Portugal to Poland - to hunt plants for our trials and observe the nursery industry and public gardens. Then in August to India for more of the same, on to China in September for a month of travel to botanical gardens there and two horticultural symposia, on to Australia for a month and a half, then to New Zealand for a month and a half, Christmas in Tahiti?? - and back to Raleigh in early January 1989.

I will be carrying a portable computer and want to write a great deal during the year - numerous articles, several newsletters (in fact you'll unquestionably get better publication service from me out of the country than you did in 1987 while here!), and a hoped for book draft. One of the most interesting challenges ahead is how to pack a single suitcase to live out of for a year - summer and winter seasons, work and play - the film logistics alone boggle the mind! Luckily chocolate and pastries are available most everywhere and there is no need to pack these essentials. We plan to keep the NCSU Arboretum (now the JC Raulston Arboretum) programs and lectures going full swing here, the NCAN August plant distribution, the members plant distribution in the fall, and continued development in the arboretum - and we hope you will continue your much needed and appreciated support and visits during this somewhat disjointed year.

1987 NCSU Arboretum (now the JC Raulston Arboretum) PLANT DISTRIBUTION

NCAN Short Course and Trade Fair - Asheville, NC - August 23-25

(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 university 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 free distribution as an incentive to try to encourage nurserymen to grow some new crops. To allow our "Friends" to have a feel for this outreach, I am again as in recent years, including here the information provided at the 1987 meeting on plants distributed. Note - the supply of plants distributed at the meeting has been exhausted and these plants are no longer available.)

Each year a selection of plants from The NCSU Arboretum (now the JC Raulston Arboretum) is made for propagation and distribution to N.C. 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 plant ability to be propagated in midsummer when the Department of Horticulture propagation benches are empty, size of stock 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. The 1987 distribution contains several plants resulting from the 1985 Korean collecting expedition sponsored in part by NCAN.

These plants provided for growers represent just a sample of the 5,000 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 for nurserymen collecting plants from the arboretum for the first time, an appointment be made (call 919-737-3132) to coordinate which materials will be collected and our general guidelines for collection procedures. Dozens of growers now gather many thousands of cuttings annually in this manner.

We are disappointed to only offer thirteen selections this year in our 1987 distribution. A period of intense heat in poorly ventilated houses immediately following our major cutting period caused the loss of over 3,000 cuttings of an additional ten species we planned to offer.

***** NOTE - MOST OF THESE PLANTS ARE TOO SMALL TO BE PLANTED DIRECTLY INTO THE FIELD AT THIS STAGE, AND ARE TOO YOUNG TO OVERWINTER SUCCESSFULLY UNLESS POTTED (IF BARE ROOT), OR SHIFTED INTO LARGER POTS, WINTER-PROTECTED, AND GROWN ANOTHER YEAR BEFORE PLANTED OUT. *****

1. Agapanthus 'Peter Pan' - 'Peter Pan' Agapanthus or Dwarf Blue "Lily-of-the-Nile" (Liliaceae). A herbaceous perennial which produces blue flowers on inflorescences about 1' in height in mid-summer. Various authorities disagree as to whether this plant is cultivar of A. africanus or A. orientalis. It is commonly felt that agapanthus cultivars are tender and only suited for houseplant pot culture in N.C. but our trials of numerous cultivars are showing that many make very successful perennials with showy flower displays in Raleigh. Much more trial is needed throughout the state to see how hardy each type may be. For insurance - it is best to mulch plants after the foliage is frozen in the fall.

This plant is very easily propagated by division of the clumps at most any time of the year. Last winter I brought back two one-gallon cans from California (where it is widely grown and sold) and in the first division we produced over 100 divisions which were grown in quarts until divided again for this distribution - yielding about 300 plants in seven months from two full one- gallon cans. It is also being produced by commercial tissue culture labs for sale. A Texas grower has just discovered a white flowered form of this dwarf and with

tissue culture techniques he will have liners for sale in summer of 1988. With commercial availability of this plant in Florida, Texas, and California markets - it would be possible to rapidly begin using this and other beautiful agapanthus in the NC nursery/landscape trade. The Agapanthus plantings in the arboretum are at the south side of the white pine hedge (groundcovers plaza), and at the front of the bark bed just east of the lathhouse (on the main arboretum road through the farm).

2. Baptisia pendula - Wild White Indigo (Leguminosae). This beautiful herbaceous perennial native to the southeast piedmont region from Florida to North Carolina is essentially unknown as a garden plant. Our plant is now over five feet in diameter and stands four feet high in bloom with long inflorescences of pure white flowers against dark colored stems. The strongest flowering will occur on plants growing in full sun and it will remain in bloom 2-3 weeks. After flowering the foliage is attractive and remains until killed by frosts in autumn. Will be useful in zones 5-9. (The name pendula refers to the seed pods which hang down as compared to the upright pods of the very similar B. alba. This outstanding native perennial deserves widespread use in the commercial perennials industry.

The clumps can be dug in late winter and divided - but labor requirements are high and plant yields are low. Commercial propagation is most likely by seed, with saleable plants produced in 8-10 weeks from spring seeding. Our isolated plants do not produce seed in spite of heavy flowering, so several plants in close proximity may be necessary to get pollination for good seed set. On an experimental basis last year we tried softwood cuttings under mist in summer with very good results. The plants being distributed were taken this summer as softwood cuttings in June under mist with about 90% successful rooting. A cutting directly rooted in a quart container should produce a small flowering plant of saleable size the following spring. In the arboretum, the largest plant is near the main drive entrance off Beryl Road - on the west side between the rhododendron and large holly; and a second plant is located in the native plants garden toward the left front as one faces the bed.

3. Carex 'Hime Kawasuga' - Dwarf Variegated Japanese Carex (Cyperaceae). A small evergreen carex reaching about 8-10" in diameter and 5-6" in height with beautiful delicate texture. Will grow in sun or shade but probably best in light shade. Have not tested it in the mountains area but expect that it should grow well anywhere in N.C. Propagation is by division of the clumps which can be done at varied times of the year, but likely best just before new growth begins in spring. The critical factor seems to be to not divide clumps into pieces smaller than ones which each have roots on the division. We pot divisions in cell packs and place under mist for several weeks until rooting is ample to support the plant. One year of growth from a good division should provide a satisfactory quart plant for sale. Plants are located in the lathhouse .

4. Cornus sericea 'Kelseyi' - Kelseyi Dwarf Dogwood (Cornaceae). This dwarf cultivar of the native eastern U.S. redosier dogwood reaches about 2-3' in height and spreads to 4-6' in diameter with time. Branches are very fine and twiggy; and are covered densely with handsome green foliage in summer. Though the branches have reddish bark color in winter, it is not the intense coloration of other named clones. It is most useful as a dense medium height groundcover for sunny areas - perhaps on road banks, along creeks, in parking lots, etc.

Very easily propagated from softwood cuttings during the summer under mist, or from hardwood cuttings during winter. Mature plants naturally tip layer to the ground and divisions can be made and potted. A well rooted cutting will make a good gallon can with one season of growth. Our plant is located in the west arboretum at the east end of the second bed down the hill.

5. Cryptomeria japonica 'Akita Strain' - Japanese Cedar (Taxodiaceae). Cryptomeria is a relatively common conifer tree in the nursery industry and well adapted to use in N.C. Dr. John Creech, former director of the U.S. National Arboretum, recently obtained a large quantity of seed of this superior strain from Japan for distribution - our plants are from the seed he provided us with. Plants grow rapidly and will reach 30' in most landscapes here. Cuttings will root well at most any time of year. This specific strain not yet on display in the arboretum, but the large cultivar collection of Cryptomeria is in the east arboretum in the dwarf loblolly pine/magnolia area.

6. Euonymus japonica 'Chollipo' - 'Chollipo' Euonymus (Celastraceae). This new cultivar of this species widely grown in the U.S. nursery industry originated at the Chollipo Arboretum in South Korea and was obtained there by our 1985 collecting expedition. This is its first industry release in the U.S. The plant has a distinctly different growth habit from other cultivars in production with fastigate columnar growth. The parent plant in Korea is perhaps 4-5' in width and 12-14' in height. Potentially useful for screening or as a specimen fastigate plant. It would be expected to have the same susceptibility to scale of other such cultivars. Very easy from cuttings at any time of year and fast growing.

7. Forsythia koreana 'Ilwang' - 'Ilwang' Forsythia (Oleaceae). This new cultivar of Korean forsythia (the name is Korean for 'Sunlight') was brought to Brookside Gardens in Wheaton, Md. by Barry Yinger and they have been promoting it for nursery use across the U.S. It has golden variegated leaves with green centers surrounded by a yellow margin in irregular patterns. It is best grown in light shade for maximum beauty of the leaves. In full sun, although the leaves will have the most intense yellow coloration, they are also much smaller and appear more stressed. Flowering is more sparse than with many of the modern forsythia hybrids, but new foliage appears as the flowers begin to fade and the bright yellow young leaves give the appearance of extended showy flowering. And the yellow leaves add color through the summer. The plant is a little unstable and branches of solid yellow or green will occasionally appear and these should be removed to maintain the true cultivar. Growers in particular should carefully monitor their propagation stock to ensure the true clone is being produced. Softwood or hardwood cuttings are very easily rooted and plants are rapid growing. Will be useful anywhere in N.C. Our two plants are located in the southeast corner Forsythia collection, and in the lathhouse.

8. Gelsemium rankanii - Autumn-Blooming Carolina Jessamine (Loganiaceae). A rare southeastern U.S. species of evergreen jessamine vine very similar in appearance to the commonly grown G. sempervirens. It was introduced to the nursery industry by Woodlander's Nursery in Aiken, S.C. and is beginning to be found in production occasionally. The most significant difference in the two species is that G. sempervirens flowers only in spring; whereas G. rankanii flowers heavily in late fall - usually October to December in Raleigh - and then again in spring at the normal time. Another difference (I am told since I have no sense of smell) is that G. rankanii does not have the fragrance of G. sempervirens. Plants are easily propagated by cuttings under mist at most anytime of year and grow very rapidly. Our plant is located in the west arboretum in the first bed down the hill beside the deciduous holly collection.

9. Ilex decidua and verticillata cultivars - Possumhaw and Winterberry Hollies (Aquifoliaceae). These native southeastern U.S. species of deciduous hollies are outstanding for autumn and early winter displays of brilliant red berries. Many superior selections have been made in recent years which have outstanding foliage color and abundant, brightly color fruit. The three cultivars listed below have been propagated for distribution. Only one of the three will be included in each bag as we only had cuttings to produce about 60 plants of each clone. Note carefully which of the three (9A, 9B, or 9C) you received to label them correctly when you get home.

9A - Ilex verticillata 'Council Fire' - 'Council Fire' Winterberry Holly.

9B - Ilex verticillata 'Pocohantas' - 'Pocohantas' Winterberry Holly.

9C - Ilex decidua 'Warren's Red' - 'Warren's Red' Possumhaw Holly.

These plants are tolerant of a wide variety of soil types, moisture levels and exposures. Plants grow 7-12 in height and tend to spread slowly by root suckering with time. Propagation is by softwood cuttings under mist in summer - varied sources suggest from June through the period near leaf drop in autumn. Ours were propagated in July. A good commercial source for liners of the newer cultivars in this fine group of plants is Simpson Nursery Company, 1504 Wheatland Rd., P. O. Box 2065, Vincennes, Ind. 47591 (812-822-2441) (Note - wholesale only). Our plants (of these and many other cultivars) are in the west arboretum in the first bed down the hill at the east end - immediately seen as you enter the area after the Japanese garden.

10. Juniperus chinensis 'Expansa Aureovariegata' - Variegated Spreading Juniper (Cupressaceae). This handsome variegated juniper is very rarely seen in commercial production and deserves widespread use. This summer during the American Conifer Society national meeting in Raleigh - Susan Martin, the curator of the Gotelli collection at the U.S. National Arboretum in Washington, D.C. also strongly promoted this plant as an excellent choice for more widespread use. (An interesting sidelight about that meeting and this plant - we donated two of the rooted cuttings (same ones distributed at the NCAN meeting) for the ACS annual plant auction and they sold for $19 per rooted cutting!). Our parent plants are now 2' tall by 7' in width with unform color variegation throughout the plants. Cuttings can be rooted either in mid-summer (if mature wood is taken on the cuttings) or perhaps better in December-February. We have received it from several different sources - once being sold very incorrectly by a west coast nursery as J. procumbens 'Variegata'. Large quantities of cuttings could be obtained from the numerous plants we have at different locations around the arboretum. Located in the parking lot by the fastigate English oak, in the conifer planting by the dwarf loblolly pines, and in the magnolia/spruces area.

11. Juniperus deppeana 'McFetters' - 'McFetters' Alligator Juniper (Cupressaceae). This plant was originally obtained from nurseryman Tom Dilatush of New Jersey who obtained it from a grower in Arizona where it was originally found as a wild seedling variant in the wild. Alligator juniper is so named for the plate-like flaking bark found on the trunk as the tree ages. The species can grow to 60' in the mountains of Arizona where native, but it will likely be a 15-20' plant in the landscape here. The bright blue foliage of this plant is quite striking with the bluest foliage of any of the conifers in our collection - surpassing even the J. scopulorum and Picea pungens cultivars. Originally I did not expect much success from this plant - predicting it would root rot in our hot, wet summers; or if it would grow, that it would be difficult to propagate. I have been wrong on both accounts. It grows vigorously and has propagated well from cuttings taken in December-February under mist. I feel it has excellent commercial potential and deserves widespread use. Other than the Dilatush Nursery I know of no commercial source at present. Our plant is in the east arboretum, north of the dwarf loblolly pines in the magnolia bed and east of the pampas grass cultivars.

12. Salix alba 'Chermesiana' - 'Chermesiana' Willow (Salicaceae) The bright colored twigs of the red and golden barked shrub dogwoods are fairly common and well known to the nursery/landscape. Colored bark tree cultivars are less common and deserve consideration for additions to the landscape. This very old cultivar discovered in Germany in 1840 has bright orange/red bark in winter which gives a spectacular appearance to the plant. Like most willows it is easy to propagate from cuttings (both soft and hardwood) and rapid growing. It will likely make a 30' tree. Our plant in the west arboretum in the southwest corner.

13. Viburnum awabuki 'Chindo' - 'Chindo' Evergreen Viburnum (Caprifoliaceae). The Awabuki viburnum is fairly common in nursery production in the deep south and California. During the 1985 Korean expedition on the island of Chindo off the south mainland coast we found a large planting of this species in a public grade school landscape. Typical of rural landscaping, the plants had originally been collected from the native woods nearby and transplanted to the school grounds. Among the plants was a single individual with much superior fruit display of large masses of bright red fruit in large globular clusters which hung down from the 15' tree like giant Christmas tree ornaments. We collected cuttings of this one plant and successfully returned them to the U.S. for rooting. During the last two years I have been building up numbers which are now adequate to distribute for further trial. At this time we do not know the hardiness of this particular clone so plantings will need to be made throughout the state to see where it will survive. The cutting you receive should be kept in a protected area this winter and grown to some size before subjecting it to severe weather. My predictions are for survival to

about 5-10F, but could be lower. Very easy to propagate from cuttings at most any time of year and rapid growing. Our original plant (which survived outdoors in the 1986-87 winter) is now over 4' tall in spite of the many cuttings which have been removed from it. Planted in the east arboretum behind the liriope collection near the entrance.

GYMNOSPERMS ("CONIFERS") IN THE NCSU Arboretum (now the JC Raulston Arboretum)

Dr. J. C. Raulston - August 1987

The following compilation is the first attempt to develop a single list of all conifers in The NCSU Arboretum (now the JC Raulston Arboretum) collections with their current location (keyed to the map at the end of this newsletter) and size. Undoubtedly numerous errors exist, plants will be missing, and many corrected identifications will need to be made. But students, visitors and growers can get a rough idea of contents of the collection, and the majority of plants can be located through use of this guide. This listing will be accompanied by new labels on all conifers in the arboretum at this time. Those who want to try to find specific plants from this list on a visit of the arboretum will find a map showing the bed location indicated in the list below included at the end of the newsletter.

Abies balsamea 'Nana' (8") P-03

Abies bornmuellerana (1') Nursery

Abies firma (3" seedlings) Nursery

Abies firma (Rooted cuttings) (1-2') Nursery

Abies firma (3') W-08

Abies fraseri (2') Nursery

Abies homolepis (3" seedlings) Nursery

Abies homolepis 'Prostrata' (10") Nursery

Abies kawakamii (2-4") Nursery

Abies mariesii (NA 51364) (4") Nursery

Abies pindrow (1") Nursery

Abies pinsapo var. marocana (6") Nursery

Abies pinsapo var. Taz-? (8") Nursery

Abies sachalinensis BSG 169/77 (3') L-04

Abies sp. (1') W-12

Abies sp. (1') W-12

Abies vejari (18") Nursery

Araucaria araucana (4') E-03

Araucaria araucana (1-2') Nursery

Callitris oblongata (5') L-08

Callitris oblongata (4') Nursery

Calocedrus decurrens (2") L-02

Cedrus atlantica 'Aurea' (2') Nursery

Cedrus atlantica 'Glauca Aurea' (4") W-01

Cedrus atlantica 'Glauca Pendula' (9') E-02

Cedrus atlantica 'Glauca Pendula' (4')

Cedrus atlantica 'Gold Tip' (15") Nursery

Cedrus deodara 'Aurea Pendula' (7") S-03

Cedrus deodara "Aurea Prostrata" (18") Nursery

Cedrus deodara 'Creampuff' (2') Nursery

Cedrus deodara 'Descanso Dwarf" (4") S-03

Cedrus deodara 'Kashmir' (7') E-25

Cedrus deodara 'Nana' (5"T X 1'W) L-04

Cedrus deodara 'Prostrata' (?) (8"T X 1'W) L-04

Cedrus deodara "Pygmea" (NA 28932) (18") E-25

Cedrus deodara "Shalimar' (2")

Cedrus deodara (Unk. Iseli Cv.) (10') E-25

Cedrus deodara (Unk. Cv.) (3") L-04

Cedrus deodara 'Verticillata Glauca' (8") E-25

Cedrus deodara 'Viridis Prostrata" (10"T X 3"W) E-02

Cedrus deodara 'Wells Nursery, WA - Cv.#1" (4")

Cedrus deodara 'Well's Nursery, WA - Cv.#2' (4')

Cedrus libani (6') L-04

Cedrus libani 'Brevifolia" (3") L-04

Cedrus libani 'Brevifolia Epsteinana' (3') E-25

Cedrus libani 'Glauca Pendula" (7') E-25

Cedrus libani 'Minuata' (3') E-25

Cephalotaxus coreana (NA3861) (1') Nursery

Cephalotaxus harringtonia 'Duke Gardens' (1') W-07

Cephalotaxus harringtonia 'Fastigata" (7") E-04

Cephalotaxus harringtonia 'Ogon' (3') L-04

Cephalotaxus harringtonia 'Pedunculata' (8")

Cephalotaxus harringtonia 'Prostrata' (2') S-05

Cephalotaxus sinensis (3" seedlings) Nursery

Cephalotaxus (Unk. Sp.) (3') W-08

Chamaecyparis henryii (8") W-09

Chamaecyparis lawsoniana 'Golden Showers' (6') L-04

Chamaecyparis lawsoniana 'Lycopoides" (4") E-04

Chamaecyparis lawsoniana 'Nestoides' (2') L-04

Chamaecyparis lawsoniana 'Stewartii' (15")

Chamaecyparis lawsoniana 'Stilton Cheese' (18") L-08

Chamaecyparis lawsoniana 'Winston Churchill' (2') L-08

Chamaecyparis lawsoniana (Unk. SF Cv.) (2") E-01

Chamaecyparis nootkatensis 'Glauca' (1') E-22

Chamaecyparis nootkatensis 'Glauca Compacta' (15")

Chamaecyparis nootkatensis 'Glauca Nana' (6") E-22

Chamaecyparis nootkatensis 'Pendula' (8') E-22

Chamaecyparis nootkatensis 'Pygmea' (1') E-22

Chamaecyparis nootkatensis 'Variegata' (1') E-22

Chamaecyparis nootkatensis 'Variegata' (6") Nursery

Chamaecyparis nootkatensis 'Variegata' (1') S-03

Chamaecyparis obtusa 'Aurea' (1') E-19

Chamaecyparis obtusa 'Aurea' (15") W-01

Chamaecyparis obtusa 'Bess' (5') L-04

Chamaecyparis obtusa 'Confucious' (1') Nursery

Chamaecyparis obtusa 'Confucious' (1') S-06

Chamaecyparis obtusa 'Confucious' (15") W-16

Chamaecyparis obtusa 'Contorta' (3") L-04

Chamaecyparis obtusa 'Contorta' (4") L-04

Chamaecyparis obtusa 'Coraliformis' (4') E-19

Chamaecyparis obtusa 'Crippsii' (8') E-22

Chamaecyparis obtusa 'Crippsii' (8') S-04

Chamaecyparis obtusa 'Crippsii' (5') W-10

Chamaecyparis obtusa 'Filicoides' (3') W-08

Chamaecyparis obtusa 'Gracilis' (2') P-02

Chamaecyparis obtusa 'Hage" (3") L-08

Chamaecyparis obtusa 'Juniperoides' (4") Nursery

Chamaecyparis obtusa 'Kamaani/Hiba' (5"') L-04

Chamaecyparis obtusa 'Kosteri' (8") P-03

Chamaecyparis obtusa 'Lil Marky' (8") L-04

Chamaecyparis obtusa 'Lycopoides' (3') L-04

Chamaecyparis obtusa 'Lycopoides Aurea' (2') Nursery

Chamaecyparis obtusa 'Lynne's Golden Ceramic Christmas Tree' (8") L-04

Chamaecyparis obtusa 'Mariesii' (18") E-19

Chamaecyparis obtusa 'Mariesii' (2') E-19

Chamaecyparis obtusa 'Mariesii" (3') E-19

Chamaecyparis obtusa 'Mariesii' (1') P-03

Chamaecyparis obtusa 'Nana' (18") E-19

Chamaecyparis obtusa 'Nana' (10") L-05

Chamaecyparis obtusa 'Nana' (5 at 2-3') L-07

Chamaecyparis obtusa 'Nana Aurea' (1') E 19

Chamaecyparis obtusa 'Nana Aurea' (1') P-03

Chamaecyparis obtusa 'Pygmaea' (18") E-19

Chamaecyparis obtusa 'Pyramidalis" (3') L-04

Chamaecyparis obtusa 'Reis ?-eka Compacta' (15")

Chamaecyparis obtusa 'Sanderi' (6") L-04

Chamaecyparis obtusa 'Sanderi' (3') W-13

Chamaecyparis obtusa 'Tetragona Aurea" (9') E-19

Chamaecyparis obtusa 'Verdoni' (6") L-04

Chamaecyparis obtusa (Unk. Ext. Dwf.) (3") L-04

Chamaecyparis obtusa (Unk Ext Dwf) (3") L-04

Chamaecyparis obtusa (Unk. Dwf.) (3') E-19

Chamaecyparis obtusa (Unk. Dwf.) (1') L-04

Chamaecyparis obtusa (Unk. Dwf.) (6") W-01

Chamaecyparis obtusa (Unk. - Nana Aurea?) (1') W-18

Chamancyparis obtusa (Unk. Dw. Silver Var.) (6") L-08

Chamaecyparis obtusa var. formosana (6') L-04

Chamaecyparis pisifera (30") E-03

Chamaecyparis pisifera 'Aurea Nana' (4') P-02

Chamaecyparis pisifera 'Boulevard' (9') E-19

Chamaecyparis pisifera 'Chabo-Yadori' (7') E-19

Chamaecyparis pisifera 'Filifera' (22") E-04

Chamaecyparis pisifera 'Filifera' (2') S-01

Chamaecyparis pisifera 'Filifera' (3') W-13

Chamaecyparis pisifera 'Filifera' (4') W 16

Chamaecyparis pisifera 'Filifera Aurea' (3') E-23

Chamaecyparis pisifera 'Filifera Aurea' (15")W-01

Chamaecyparis pisifera 'Filifera Aurea' (1') W-01

Chamaecyparis pisifera 'Filifera Aurea' (6') W-02

Chamaecyparis pisifera 'Filifera Aurea' (15")W-16

Chamaecyparis pisifera 'Filifera Aureovariegata' (10")

Chamaecyparis pisifera 'Gekko Hiba' (6') E-19

Chamaecyparis pisifera 'Gold Dust' (7') W-08

Chamaecyparis pisifera 'GoId Selection' (2') S-06

Chamaecyparis pisifera 'Hakko Hiba' (8') L-04

Chamaecyparis pisifera 'Hakko Hiba' (5') L-06

Chamaecyparis pisifera 'Juniperoides Aurea' (15") E-19

Chamaecyparis pisifera 'Minima' (w/reversion) (2') E-19

Chamaecyparis pisifera 'Minima Aureovariegata' (2') E-19

Chamaecyparis pisifera 'Minima Aureovariegata' (2') E-19

Chamaecyparis pisifera 'Monstrosa' (18") L-04

Chamaecyparis pisifera 'Plumosa Aurea' (7') E-19

Chamaecyparis pisifera 'Plumosa Aureovariegata'(9') E-19

Chamaecyparis pisifera 'Plumosa Compressa' (2') E-01

Chamaecyparis pisifera 'Plumosa Juniperoides' (3') E-19

Chamaecyparis pisifera 'Plumosa Rogersii' (6') W-08

Chamaecyparis pisifera 'Sanderi' (4') E-19

Chamaecyparis pisifera 'Sanderi'(?) (1') W-18

Chamaecyparis pisifera 'Snow' (30") E-19

Chamaecyparis pisifera 'Snow' (2') L-04

Chamaecyparis pisifera 'Snow' (2') W-05

Chamaecyparis pisifera 'Squarrosa Cristata' (4') E-19

Chamaecyparis pisifera 'Squarrosa Lutea' (8') E-19

Chamaecyparis pisifera 'Squarrosa Minima' (2') E-02

Chamaecyparis pisifera 'Squarrosa Nana Aurea' 6' W-08

Chamaecyparis pisifera 'Tetragona' (5') E-19

Chamaecyparis pisifera 'Tetragona' (9') E-19

Chamaecyparis pisifera 'Tetragona'(6') E-22

Chamaecyparis pisifera 'Tetragona Aurea' (3') E-23

Chamaecyparis pisifera (Unk. Cv.) (18") E-19

Chamaecyparis pisifera (Unk. Cv.) (15") W-13

Chamaecyparis pisifera (Unk. Cv.) (20") W-16

Chamaecyparis pisifera (Unk. Dwf. Cv.) (10") W-18

Chamaecyparis pisifera (Unk. Dwf. Cv.) (2') E-19

Chamaecyparis pisifera (Unk. Golden Cv.) (4') W-13

Chamaecyparis pisifera (Unk. Golden Cv.) (4') W-18

Chamaecyparis pisifera (Unk. Golden Dwf. Var.) (2') L-04

Chamaecyparis thyoides 'Ericoides' (6') L-04

Chamaecyparis thyoides 'Heather' (15") Greenhouse

Chamaecyparis thyoides 'Little Jamie' (5') L-04

Cryptomeria fortunei (Nanjing 83) (4') E-22

Cryptomeria japonica 'Akita Strain' (5" Seedlings)

Cryptomeria japonica 'Araucarioides' (1') E-22

Cryptomeria japonica 'Bandai Sugi' (4') E-16

Cryptomeria japonica 'Benjamin Franklin' (3-7') W-08

Cryptomeria japonica 'Compressa' (4") Nursery

Cryptomeria japonica 'Cristata' (8') P-04

Cryptomeria japonica 'Elegans' (3') E-22

Cryptomeria japonica 'Elegans Nana' (3') E-16

Cryptomeria japonica 'Elegans Nana' (2') E-19

Cryptomeria japonica 'Elegans Nana' (1') Greenhouse

Cryptomeria japonica 'Elegans Nana' (3') E-22

Cryptomeria japonica 'Jindai Sugi' (1') E-16

Cryptomeria japonica 'Jundai Sugi' (5') E-16

Cryptomeria japonica 'Jundai Sugi' (6') E-16

Cryptomeria japonica 'Monstrosa Nana' (2') E-22

Cryptomeria japonica 'Nana Albospicata' (1') E-03

Cryptomeria japonica 'Nana Albospicata' (1') E-04

Cryptomeria japonica 'Nana Albospicata' (4') E-15

Cryptomeria japonica 'Pomona" (Doubtful ID) (1')' E-22

Cryptomeria japonica f. radicans (BSG 260) 3' E-22

Cryptomeria japonica 'Sekkan Sugi' (14') E-22

Cryptomeria japonica 'Sekkan Sugi' (11') P-03

Cryptomeria japonica 'Spiraliter Falcata' (1') E-22

Cryptomeria japonica 'Spiraliter Falcata' (2') L-04

Cryptomeria japonica 'Tenzan Yatsabusa' (4") L-04

Cryptomeria japonica 'Taisho Tamasugi' (2') E-22

Cryptomeria japonica 'Taisho Tamasugi' (1') Nursery

Cryptomeria japonica 'Tansu' (1') P-03

Cryptomeria japonica Unk. Cv. (2') E-22

Cryptomeria japonica Unk. Cv. (2') E-22

Cryptomeria japonica Unk. Cv. (3') E-22

Cryptomeria japonica Unk. Cv. (7') L-06

Cryptomeria japonica Unk. Cv. (8") Nursery

Cryptomeria japonica Unk. Cv. (2') W-09

Cryptomeria japonica 'Vilmoriniana' (2') E-16

Cryptomeria japonica 'Vilmoriniana' (1') E-16

Cryptomeria japonica 'Witch's Broom' (8") E-16

Cryptomeria japonica 'Yellow Twig' (1') E-16

Cryptomeria japonica 'Yoshino' (18') E-16

Cunninghamia konishii (9') L-04

Cunninghamia konishii (1-3') Nursery

Cunninghamia konishii (15") W-07

Cunninghamia lanceolata 'Glauca' (5') E-18

Cunninghamia lanceolata 'Glauca' (1-4') Nursery

Cupressocyparis leylandii (20-24') E-08

Cupressocyparis leylandii (20-24') E-09

Cupressocyparis leylandii (20-24') E-17

Cupressocyparis leylandii (10') L-05

Cuprossocyparis leylandii (10') L-06

Cupressocyparis leylandii (14-20') S-03

Cupressocyparis leylandii (14') W-02

Cupressocyparis leylandii (8-15') W-03

Cupressocyparis leylandii (6-10') W-14

Cupressocyparis leylandii 'Castlewellan' (10')P-04

Cupressocyparis leylandii 'Castlewellan'(14')W-06

Cupressocyparis leylandii 'Contorta' (7') P-04

Cupressocyparis leylandii 'Contorta' (5') W-07

Cupressocyparis leylandii '-- Gold' (4') E-01

Cupressocyparis leylandii 'Gold Cup' (3-5') E-02

Cupressocyparis leylandii 'Green Spire' (4') E-01

Cupressocyparis leylandii 'Haggerstown Grey' (17') E-01

Cupressocyparis leylandii 'Naylor's Blue'(17')E-01

Cupressocyparis leylandii 'Naylor's Blue' (9')E-10

Cupressocyparis leylandii 'Naylor's Blue'(5') W-06

Cupressocyparis leylandii 'Robinson's Gold'(3')E-01

Cupressocyparis leylandii Unk. Cv.(Var.) 17' E-01

Cupressocyparis notabilis (13') E-01

Cupressocyparis notabilis (7") W-17

Cupressocyparis ovensii (12') E-02

Cupressus bakeri (2') E 07

Cupressus bakeri (1') Nursery

Cupressus bakeri (2') S-06

Cupressus bakeri (7') W-07

Cupressus cashmeriana (4') Nursery

Cupressus duclouxiana (2") E-07

Cupressus duclouxiana (6') E-07

Cupressus funebris (4') E-07

Cupressus glabra 'Blue Ice' (3") E-22

Cupressus glabra 'Clemson Green' (4') E-07

Cupressus glabra 'Gareei" (14') E-07

Cupressus glabra 'Gareei' (10') W-07

Cupressus glabra 'Silver Smoke" (2') E-22

Cupressus lusitanica (7') E-07

Cupressus macnabiana (4') E-07

Cupressus macrocarpa (4') E-07

Cupressus macrocarpa 'Nana' (2') L-04

Cupressus sargentii (1') E-07

Cupressus sargentii (2') E-07

Cupressus sempervirens 'Swanne's Golden' (6') L-04

Cupressus (Unk. Sp.) (7') W-13

Dacrydium bidwillii (2') Nursery

Dacrydium franklinii (10") Nursery

Fitzroya cupressoides (8") Nursery

Fokienia hodginsii (4') Nursery

Ginkgo biloba (10') L-06

Ginkgo biloba (3') W-08

Ginkgo biloba 'Chi-Chi' (9') W-08

Ginkgo biloba 'Saratoga" (3") W-08

Ginkgo biloba 'Variegata' (18") Nursery

Glyptostrobus lineatus (12') E-04

Glyptostrobus lineatus (8') W-06

Juniperus (?-Cupressus bakeri) (9') E-07

Juniperus cedrus (18") Nursery

Juniperus chinensis 'Blaauwi' (4') E-20

Juniperus chinensis 'Blue Shimpaku' (2') S-03

Juniperus chinensis 'Corymbosa' (2') W-02

Juniperus chinensis 'Expansa Aureospicata' (1') E-16

Juniperus chinensis 'Expansa Aureospicata' (3') E-19

Juniperus chinensis 'Expansa Aureospicata' (2') E-19

Juniperus chinensis 'Expansa Aureospicata" (10") E-24

Juniperus chinensis 'Expansa Aureospicata' (1') P-03

Juniperus chinensis 'Expansa Aureospicata' - Juv. (2')

Juniperus chinensis 'Foemina' (9') E-16

Juniperus chinensis 'Oblonga' (11') S-06

Juniperus chinensis 'Old Gold' (4'T X 10'W) E-20

Juniperus chinensis 'Parsonii' (4') E-03

Juniperus chinensis 'Parsonii' (2'T X 12'W) E-16

Juniperus chinensis 'Parsonii' (3'T X 9"W) E-19

Juniperus chinensis 'Pyramidalis' (12') E-03

Juniperus chinensis 'Shimpaku' (4") E-16

Juniperus chinensis 'Shimpaku' (15") W-01

Juniperus chinensis 'Shimpaku Aurea' (2') W-13

Juniperus chinensis 'Stricta' (10') E-19

Juniperus chinensis 'Torulosa' (14') E-20

Juniperus chinensis 'Torulosa Variegata' (7') E-20

Juniperus chinensis (?) (Unk. Cv.) (2') W-09

Juniperus communis 'Berkshire' (1'T X 2'W) L-02

Juniperus communis 'Compressa' (4') E-19

Juniperus communis 'Depressa' (3') E-19

Juniperus communis 'Depressa Aurea' (3') E-19

Juniperus communis 'Veitch's Blue' (15") W-13

Juniperus communis (Unk. Cv.) (1' T X 3' W) E 16

Juniperus communis (Unk. Cv.) (2"T X 7'W) E-19

Juniperus communis (Unk. Cv.) (4') E-19

Juniperus communis (Unk Cv) (2') E 19

Juniperus conferta (6"T X 2"W) E-16

Juniperus conferta (2'T X 16"W) E-16

Juniperus conferta (15") E-34

Juniperus conferta 'Akebono' (6") E-07

Juniperus conferta 'BSG1932-Golden Vr" (6") E-07

Juniperus conferta 'Blue Pacific' (6") E-07

Juniperus conferta 'Emerald Sea' (6") E-07

Juniperus conferta 'Silver Mist' (6"T X 3"W) L-02

Juniperus conferta 'Silver Mist' (8") Nursery

Juniperus deppeana 'McPhetters' (5') E-22

Juniperus deppeana 'McPhetters' (2') Greenhouse

Juniperus formosana (4') E-16

Juniperus 'Hetzi' (9') E-19

Juniperus horizontalis 'Admirabilis' (18"T X 11"W) E-19

Juniperus horizontalis 'Adpressa' MN54 (2") W-18

Juniperus horizontalis 'Alpina' (4') E-22

Juniperus horizontalis 'Alpina' (18"T X 3'W) W-09

Juniperus horizontalis 'Andorra Compacta' (1') W-10

Juniperus horizontalis 'Argentea' AR91 (3") W-18

Juniperus horizontalis 'Aunt Jemina" (1"T X 4"W) W-09

Juniperus horizontalis 'Bar Harbor' (3'"T X 8'W) E-20

Juniperus horizontalis 'Bar Harbor" (6") S-01

Juniperus horizontalis 'Bar Harbor' (4"T X 6'W) W-09

Juniperus horizontalis 'Big Sky Davidson' (3") W-17

Juniperus horizontalis 'Blue Acres' (3"TX3"W) W-10

Juniporus horizontalis 'Blue Chip' (6"T X 3'W) E-20

Juniperus horizontalis 'Blue Chip' (5" X 3'W) W-09

Juniperus horizontalis 'Blue Forest' (8"T X 2'W) W-09

Juniperus horizontalis 'Blue Horizon' (2"T X 6'W) E-20

Juniperus horizontalis 'Blue Horizon' (3"T X 2'W) W-09

Juniperus horizontalis 'Blue Mat' (3"T X 4"W) W-09

Juniperus horizontalis "Blue Vase" (Not True) (8") W-18

Junipcrus horizontalis 'Coast of Maine'(3" X 6"W) W-10

Juniperus horizontalis 'Douglasii' (7"T X 5'W) W-18

Juniperus horizontalis 'Emerald Isle' (4"T X 3'W) W-10

Juniperus horizontalis 'Emerald Spreader' (3") E-20

Juniperus horizontalis 'Emerald Spreader' (4") W-09

Juniperus horizontalis 'Emerson' BBG 7492 (4") W-10

Juniperus horizontalis 'Exima' UTA (4"T X 4'W) W-18

Juniperus horizontalis 'Filicinus Minimus" (3") W-17

Juniperus horizontalis 'Girard' (2"T X 2"W) W-17

Juniperus horizontalis 'Glauca' (3"T X 5"W) W-09

Juniperus horizontalis 'Glauca' AR94 (15"T X 6"W) W-10

Juniperus horizontalis 'Glenmore' (4"T X 2"W) W-18

Juniperus horizontalis 'Glomerata" (6"T X 5"W) E-19

Juniperus horizontalis 'Glomerata' (2"T X 3"W) W-17

Juniperus horizontalis 'Green Acres' (4"T X 3"W) W-10

Juniperus horizontalis 'Hill #2' (5"T X 5"W) W-17

Juniperus horizontalis 'Holden #1' (5"T X 15"W) W-17

Juniperus horizontalis 'Hughes' (3'T X 7'W) W-09

Juniperus horizontalis 'Humilis' (2"T X 2'W) W-17

Juniperus horizontalis 'Jade River' (4"T X 4"W) W-18

Juniperus horizontalis 'Jade Spreader'(3"T X 3"W) W-10

Juniperus horizontalis 'LCH 48" (6"T X 6"W) W-10

Juniperus horizontalis 'Lime Glow' (1') Greenhouse

Juniperus horizontalis 'Livida' (6") P-02

Juniperus horizontalis 'Livida' UTA (4"T X 3'W) W-17

Juniperus horizontalis 'Livingston' MN68 (1') W-10

Juniperus horizontalis 'Mother Lode' (5"T X 2'W)

Juniperus horizontalis 'Mother Lode' (3"T X 1'W) W-18

Juniperus horizontalis 'Planifolia'MO26 (1'T X 4'W)W-18

Juniperus horizontalis 'Plumosa' MO29 (10") W-17

Juniperus horizontalis 'Prince of Wales' (6") W-09

Juniperus horizontalis 'Prostrata' MO33 (4") W-17

Juniperus horizontalis 'Prostrata Glauca' (2") W-17

Juniperus horizontalis 'Prostrata Glauca' (2") W-18

Juniperus horizontalis 'Prostrata Nana'(3"T X 5'W)W-18

Juniperus horizontalis 'Pulchella' (5"T X 4"W) W-18

Juniperus horizontalis 'RBGH 74038' (2"T X 5"W) W-17

Juniperus horizontalis 'Repens' (4"T X 4"W) W-17

Juniperus horizontalis 'Ro---mara (4"T X 2"W) W-17

Juniperus horizontalis 'Silver Sheen' (6") S-06

Juniperus horizontalis 'Silver Sheen' (4"T X 4'W) W-18

Juniperus horizontalis 'Slow Blue' (4"T X 3'W) W-18

Juniperus horizontalis 'Sp. 77/074' (6"T X 5'W) W-17

Juniperus horizontalis 'Tures' Wisc.' (10" X 3'W) W-10

Juniperus horizontalis 'Turquoise Spreader'(5") E-20

Juniperus horizontalis 'Turquoise Spreader' (4") W-09

Juniperus horizontalis 'UBC #2' (3"T X 18"W) W-09

Juniperus horizontalis 'UBC #2' (6"T X 15"W) W-18

Juniperus horizontalis 'Unk. Blue Cv. (8"T X 5'W) E-34

Juniperus horizontalis 'Variegata' (6"T X 4'W) W-09

Juniperus horizontalis 'Venusta' BBG (3"T X 4'W) W-10

Juniperus horizontalis 'Watnong' (2"T X 4'W) W-18

Juniperus horizontalis 'Waukegan Sport' (3') W-09

Juniperus horizontalis 'Wilms' (1'T X 3'W) W-18

Juniperus horizontalis 'Wiltoni' (Blue Rug) (2") E-20

Juniperus horizontalis 'Wiltoni' (Blue Rug) (3") W-09

Juniperus horizontalis 'Wisconsin' WI106 (4") W-18

Juniperus horizontalis 'Youngstown' (18"T X 5'W) E-20

Juniperus horizontalis 'Youngstown' (8"T X 2'W) W-09

Juniperus horizontalis 'Yukon Belle' (4"T X 6'W) W-O9

Juniperus horizontalis ?? (gomerata?) (5"T X 1'W) E-1

Juniperus horizontalis (Unk. Cv.) (1'T X 8'W) E-16

Juniperus horizontalis (Unk. Cv.) (6"T X 9'W) E-19

Juniperus horizontalis (Unk. Cv.) W-18

Juniperus horizontalis (Unk. Cv.) W-18

Juniperus horizontalis '148-61' (6"T X 3'W) W-10

Juniperus horizontalis X J. virginiana 'Hermit' (2') W-10

Juniperus insida (3') W-08

Juniperus X media 'Arctic' (15") E-17

Juniperus X media 'Armstrong' (5') E-06

Juniperus X media 'Armstrong - UnVar. Sport' (1') E-17

Juniperus X media 'Blue & Gold' (1') L-04

Juniperus X media 'Blue & Gold' (7') S-06

Juniperus X media 'Globosa Cinerea' (2') E-20

Juniperus X media 'Milky Way' (2') Greenhouse

Juniperus X media 'Mint Julip' (4') E-17

Juniperus X media 'Old Gold' (3') E-17

Juniperus X media 'Pfitzeriana Aurea' (5'T X 12'W) E-19

Juniperus X media 'Plumosa Aurea' (2') E-16

Juniperus X media 'Saybrook Gold' (2') E-18

Juniperus X media 'San Jose' (6"T X 2'W) W-11

Juniperus X media 'Seagreen' (4') W-11

Juniperus X media (Unk. Cv.) (3') E-17

Juniperus X media (Unk. Cv.) (5') E-18

Juniperus X media (Unk. Cv.) (4'T X 6'W) W-11

Juniperus occidentalis (1') E-16

Juniperus procumbens (1'T X 10'W) E-19

Juniperus procumbens (1') E-34

Juniperus procumbens 'Bonin Isles' (1'T X 6'W) E-19

Juniperus procumbens 'California Nana' (5"T X 3'W) E-24

Juniperus procumbens 'Greenmound' (5"T X 3'W) E-24

Juniperus recurva var. coxii (2') Nursery

Juniperus recurva var. coxii (3') L-08

Juniperus rigida (3') E-16

Juniperus rigida (6') W-01

Juniperus rigida (?) (3') W-01

Juniperus rigida (15") W-18

Juniperus sabina 'Arcadia' (6") E-07

Juniperus sabina 'Broadmoor' (6") E-07

Juniperus sabina 'Broadmoor' (1'T X 9'W) E-18

Juniperus sabina 'Buffalo' (6") E-07

Juniperus sabina 'Calgary Carpet' (6") E-07

Juniperus sabina 'Calgary Carpet' (1'T X 7'W) E-19

Juniperus sabina 'Den Boer' (6") E-07

Juniperus sabina 'Heidi' (8"T X 10"W) W-18

Juniperus sabina 'New Blue Tam' (6") E-07

Juniperus sabina 'Scandens' (10"T X 3'W) E-19

Juniperus sabina 'Scandia' (6") E-07

Juniperus sabina 'Tamariscifolia' (6") E-07

Juniperus sabina 'Tamariscifolia Glauca' (2') E-19

Juniperus sabina 'Variegata' (8") Greenhouse

Juniperus sabina (Unk. Cv.) (8") E-19

Juniperus sabina (? Unk. Cv.) (1'T X 12'W) E-20

Juniperus scopulorum 'Blue Haven' (11') E-20

Juniperus scopulorum 'Cologreen' (12') E-20

Juniperus scopulorum 'Cologreen' (4') W-13

Juniperus scopulorum 'Cupressifolia Erecta' (4') W-13

Juniperus scopulorum 'Grey Gleam' (7') E-19

Juniperus scopulorum 'Grey Gleam' (4') W-13

Juniperus scopulorum 'Horizontalis'(6"T X 15"W) W-10

Juniperus scopulorum 'Manhattan' (15') E-20

Juniperus scopulorum 'Medora' (7')

Juniperus scopulorum 'Pathfinder' (4') W-13

Juniperus scopulorum 'Sparkling Skyrocket' (3') E-18

Juniperus scopulorum 'Table Top Blue' (5'T X 5'W) E-20

Juniperus scopulorum 'Table Top Blue' (2') W-13

Juniperus scopulorum 'Tolleson's Weeping Blue' 5' W-13

Juniperus scopulorum (Unk. Cv.) (7') E 20

Juniperus scopulorum (Unk. Cv.) (9') E-20

Juniperus scopulorum 'Welchii' (3') W-13

Juniperus scopulorum 'Wichita Blue' (5') W-13

Juniperus silicola (9') S-01

Juniperus squamata 'Blue Carpet' (10") E-18

Juniperus squamata 'Blue Spreader' (1'TX 3'W) E-19

Juniperus squamata 'Blue Star' (10") E-34

Juniperus squamata 'Blue Star' (1') P-03

Juniperus squamata 'Blue Star' (1') P-04

Juniperus squamata 'Fargesii' (6") Greenhouse

Juniperus squamata 'Loderi' (1') E-16

Juniperus squamata 'Loderi' (3') E-18

Juniperus squamata 'Meyeri' (4') E-19

Juniperus squamata 'Prostrata' (4"T X 2'W) E-19

Juniperus squamata 'Prostrata' (8"T X 3'W) E-19

Juniperus (Unk. Cv. - Golden Var.) (4'T X 5'W) E-20

Juniperus (Unk. Cv. - Upright Blue) (9'T X 8'W) E-16

Juniperus (Unk. Cv.) (3") E-19

Juniperus (Unk. Cv.) (8') E-20

Juniperus (Unk. Cv.) (10') E-20

Juniperus (Unk. Cv.) (2'T X 6'W) W-08

Juniperus (Unk. Cv.) (2') W-08

Juniperus (Unk. Sp.) (7') W-10

Juniperus (Unk Sp) (6') W-13

Juniperus virginiana (1-3' Seedlings) Nursery

Juniperus virginiana 'Filifera' (2') Greenhouse

Juniperus virginiana 'Hillspire' (14') E-18

Juniperus virginiana 'Keteleeri' (14') E-20

Juniperus virginiana 'Silver Spreader' (5'T X 9'W) E-18

Juniperus virginiana (Unk. Upright Cv.) (13') E-19

Keteleeria davidiana (3') Nursery

Keteleeria davidiana (1') W-08

Keteleeria evelyniana (2') Nursery

Larix gmelini var. japonica (5') L-04

Metasequoia glyptostroboides (10') W-06

Metasequoia glyptostroboides 'Sheridan Spire' (4') W-06

Microbiotica decussata (5") E-34

Microstrobus fitzgeraldii (10") Nursery

Phyllocladus alpinus (1') Nursery

Picea (Unk. Cv. - Iseli) (7') W-12

Picea abies (compact seedling) (8') E-21

Picea abies 'Little Gem' (4") L-04

Picea abies 'Nitidiformis' (1'T X 2'W) E-16

Picea abies 'Pendula' (2'T X 4'W) E-16

Picea abies 'Pendula' (4') P-03

Picea abies 'Procumbens' (1') Nursery

Picea abies 'Pumila' (6") L-02

Picea engelmannii (2') E-21

Picea gemmata (l') Nursery

Picea glauca 'Echinoformis' (15") E-02

Picea glauca 'Hillside Gem' (5") Nursery

Picea glauca var. albertiana 'Conica' (4') E-14

Picea glauca var. albertiana 'Conica' (4') E-16

Picea glauca var. albertiana 'Conica - Sander's Blue' 15" E-14

Picea glennii (NA 51232) (4") Nursery

Picea meyeri (1') Nursery

Picea morrisonicola (6") E-01

Picea morrisonicola (4-12") Nursery

Picea omorika 'Aurea' (2') E-22

Picea omorika 'Microphylla' (15") Nursery

Picea omorika 'Nana' (10") Nursery

Picea orientalis (5') W-09

Picea orientalis 'Nigra Compacta' (15") L-02

Picea 'Papoose' (6") L-02

Picea pungens 'Fastigata' (6') E-24

Picea pungens 'Fat Albert (2') E-24

Picea pungens 'Fat Albert' (6-15") Nursery

Picea pungens 'Foxtail (9') E-24

Picea pungens 'Foxtail' (6-15") Nursery

Picea pungens 'Hoopsii' (3') E-24

Picea pungens 'Hunnewelliana' (1') E-24

Picea pungens 'Mission Blue' (1') E-24

Picea pungens 'Montgomery' (15") E-15

Picea pungens 'Montgomery' (1') W-01

Picea pungens 'Pendula' (1') E-24

Picea pungens 'Procumbens' (7") E-24

Picea pungens 'Prostrata' (1'T X 2'W) E-24

Picea pungens 'Walnut Glen' (10") E-24

Picea smithiana (1') Nursery

Picea 'Tiger Tail' (1') Nursery

Pinus densiflora 'Pendula' (1'T X 4'W) W-01

Pinus densiflora 'Tigrinia' (3') W-08

Pinus densiflora 'Umbraculifera' (5') L-07

Pinus eldarica (6') E-20

Pinus elliottii (3') Nursery

Pinus flexilis 'Bonsai' (4') E-20

Pinus flexilis 'Glauca' (3') W-11

Pinus flexilis 'Glauca Pendula' (18") Nursery

Pinus flexilis (Huerfana Co., CO) (3') W-01

Pinus glabra (10') E-23

Pinus glabra (12') S-02

Pinus glabra (11') W-07

Pinus griffithii 'Zebrina' (2') Nursery

Pinus griffithii 'Zebrina' (2') W-12

Pinus heldrichii (2') E-16

Pinus heldrichii (3 - 8-12") W-02

Pinus heldrichii leucodermis (15") E-02

Pinus heldrichii leucodermis #40 (1') W-13

Pinus koraiensis (doubtful, strobus?) (1') W-02

Pinus koraiensis (doubtful) (15") W-18

Pinus leucodermis (82-BRNO) (10") W-13

Pinus massoniana (3') W-13

Pinus maximartinezii (6") Greenhouse

Pinus mugo 'Allen' (4") L-04

Pinus mugo 'Elfen' (4") L-04

Pinus mugo 'Elfengren' (6") E-22

Pinus mugo 'Oregon Jade' (5") L-04

Pinus mugo 'Oregon Pixie' (6") E-22

Pinus mugo (Unk. Oregon Cv.) (8") L-04

Pinus mugo 'Winter Gold' (8") Nursery

Pinus nigra 'Witches Broom' (8") Nursery

Pinus palustris (12') P-01

Pinus parviflora (?) (1') W-08

Pinus parviflora (?) (1') W-08

Pinus parviflora 'Adcock's Dwarf' (1') L-02

Pinus parviflora 'Fujuisumii' (12") Nursery

Pinus parviflora (Unk. Cv.) (4') W-02

Pinus pinaster (4') W-02

Pinus pinea (14') E-01

Pinus pinea (4') W-07

Pinus ponderosa (2') E-22

Pinus pumila (15") Nursery

Pinus pumila (NA 2497) (2') L-02

Pinus rigida 'Sherman Eddy' (1') L-02

Pinus rudis (8") W-13

Pinus sabiniana (4') E-20

Pinus sabiniana (1') W-13

Pinus sabiniana (2') W-18

Pinus (Shanghai Bot Garden #35) (3 seedlings) Nursery

Pinus strobus (Sheared Hedge) (7') E-34

Pinus strobus 'Contorta' (6') W-02

Pinus strobus 'Curlyleaf' (5') W-02

Pinus strobus 'Horsford' (l0") L-02

Pinus strobus 'Nana' (Grafted Standard) (4') E-05

Pinus strobus 'Nana' (15") (Doubtful - reversion?) W-01

Pinus strobus 'Nana' (1') W-08

Pinus strobus 'Pendula' (6') W-02

Pinus strobus (Unk. Cv.) (12') W-07

Pinus sylvestris 'Aurea' (6") Nursery

Pinus sylvestris 'Bennett's Prostrate' (5") Nursery

Pinus sylvestris 'Bergman #2' (1') L-02

Pinus sylvestris 'Compressa' (1') L-02

Pinus sylvestris 'Fastigata' (6') E-21

Pinus sylvestris 'Hale's Prostrata' (10") Nursery

Pinus sylvestris Unk. Compact Cv. (5') E-22

Pinus sylvestris Unk. Compact Cv. (2') W-07

Pinus sylvestris 'Watererii' (10') E-21

Pinus sylvestris 'Watererii' (2') W-12

Pinus tabuliformis (8") Nursery

Pinus taeda (40') S-06

Pinus taeda 'Cochran' (15') E-19

Pinus taeda 'Dixie' (9) E-19

Pinus taeda 'Nana' (10-18') E-19

Pinus taeda 'Nana' (8') E-22

Pinus taeda 'Nana' (10-14') L-06

Pinus taeda 'Nana' (1-2') Nursery

Pinus taeda 'Nana' (8-15') W-08

Pinus taiwanensis (3') Nursery

Pinus thunbergi (7'T) E-20

Pinus thunbergi (3') W-O9

Pinus thunbergi (NA 55171) (2') S-03

Pinus thunbergi 'Corky Bark Selection' (2') W-08

Pinus thunbergi 'Nana' (6") W-08

Pinus thunbergi 'Yatsu Ban Shoho' (1') W-08

Pinus virginiana (10') W-01

Pinus virginiana 'Pocono' (6") Greenhouse

Pinus virginiana 'Prostrata' (15") Nursery

Pinus uncinata (6") W-13

Pinus (Unk. Sp.) (7') W-01

Pinus (Unk Sp.) (3") W-13

Pinus (Unk. Sp.) (5") W-1

Pinus (Unk. Sp.) (1') W-13

Pinus (Unk. Sp.) (3') W-13

Pinus (Unk. Sp.) (15") W-16

Pinus wallichiana (3') W-13

Pinus washoensis (4") Nursery

Platycladus orientalis (6') E-16

Platycladus orientalis (20') E-2Q

Platycladus orientalis 'Filiformis Erecta' (2') E-16

Platycladus orientalis 'Meldenensis' (4') E-16

Platycladus orientalis 'Westmont' (2') E-16

Podocarpus macrophyllus 'Okina Maki' BSG 266 1'E-02

Podocarpus macrophyllus 'Self Fruitful Cv.' (1') Nursery

Podocarpus macrophyllus 'Self-Fruitful Cv.' (2') E-02

Podocarpus macrophyllus 'White Var.Cv. - Chollipo Arb'

Podocarpus nivalis (1') L-08

Pseudolarix amabilis (9') E-16

Pseudolarix amabilis (14') E-16

Pseudolarix amabilis (6') W-06

Pseudotsuga macrocarpa (6") Greenhouse

Pseudotsuga menziesii (3') W-17

Pseudotsuga menziesii 'Hillside Gem' (2') W-17

Saxegothaea conspicua (1') Greenhouse

Sciadoptys verticillata (2') E-33

Sciadoptys verticillata (9') L-07

Sequoia sempervirens (4') L-04

Sequoia sempervirens 'Adpressa' (2') E-06

Sequoia sempervirens 'Adpressa' (6') L-04

Sequoia sempervirens 'Aptos Blue' (2') E-10

Sequoia sempervirens 'Aptos Blue' (1') Nursery

Sequoia sempervirens 'Prostrata' (3"T X 1-W) E-04

Sequoia sempervirens 'Soquel' (15") Nursery

Sequoiadendron giganteum (2') E-22

Sequoiadendron giganteum 'Pendulum' (2') L-04

Taiwania cryptomerioides (2') E-22

Taiwania cryptomerioides (5') L-04

Taiwania cryptomerioides var. floussiana (4') Nursery

Taxodium ascendens (12') W-06

Taxodium distichum (15') W-06

Taxodium distichum 'Pendula' (2') W-06

Taxodium mucronulatum (5') W-06

Taxodium mucronulatum (2") Greenhouse

Taxus baccata 'Adpressa Aurea' (8") L-08

Taxus baccata 'Repandens' (15") Nursery

Taxus brevifolia (10") Nursery

Taxus cuspidata 'Aurescens' (6") E-22

Taxus cuspidata 'Aurescens' (10") L-04

Taxus cuspidata 'Aurescens' (1' Weak) S-06

Taxus floridana AA 1431-85 (6") Greenhouse

Taxus floridana (7') L-04

Taxus X media 'Kelseyi' (2.5') L-08

Taxus Unk. Cv. (3') L-04

Taxus Unk. Cv. (3') L-04

Taxus Unk. Cv. (5') L-04

Taxus Unk. Cv. (2') S-06

Taxus Unk. Cv. - Mitsch '85 (2') Nursery

Thuja ? (1') S-01

Thuja koraiensis (1') E-15

Thuja koraiensis (as received, but wrong) (4') E-16

Thuja koraiensis (as received, but wrong) (2') W-01

Thuja occidentalis 'Columnaris' (18') E-04

Thuja occidentalis 'Filiformis' (2') E-16

Thuja occidentalis 'George Peabody' (2') W-12

Thuja occidentalis 'George Washington' (7') E-23

Thuja occidentalis 'GIobosa' (9') E-06

Thuja occidentalis 'Globosa Rhindiana' (1') L-04

Thuja occidentalis 'Holmstrup' (3') E-19

Thuja occidentalis 'Hookeriana' (1') L-04

Thuja occidentalis 'Hoseri' (2') E-16

Thuja occidentalis 'Little Gem' (2') E-16

Thuja occidentalis 'Juniperoides' (4') E-16

Thuja occidentalis 'Minima' (2') E-19

Thuja occidentalis 'Oklendoreii' (2') L-04

Thuja occidentalis 'Oklendoreii' (1') W-12

Thuja occidentalis 'Pendula' (8"T X 2'W) L-08

Thuja occidentalis 'Pumila Sudworth' (7') E-16

Thuja occidentalis 'Pyramidalis' (22') E-04

Thuja occidentalis 'Recurva Nana' (2')

Thuja occidentalis 'Sherwood Forest' (1') E-20

Thuja occidentalis 'Sherwood Forest' (2') W-16

Thuja occidentalis 'Sherwood Forest' (2') W-13

Thuja occidentalis 'Sherwood Moss' (2') S-06

Thuja occidentalis 'Smargard' (2-4' Hedge) E-35

Thuja occidentalls 'Smargard' (2-5' hedge) W-01

Thuja occidentalis 'Smargard' (7') W-09

Thuja occidentalis 'Smargard' (3') W-10

Thuja occidentalis 'Sudworth Gold' (7') E-19

Thuja occidentalis 'Sudworth Gold' (5') E-23

Thuja occidentalis 'Sudworth Gold' (2') W-12

Thuja occidentalis 'Sunkist' (5') E-16

Thuja occidentalis 'Tom Thumb' (5") L-04

Thuja occidentalis 'Umbraculifera' (2') E-19

Thuja occidentalis 'Univ. of Connecticut Dwarf' (8") W-01

Thuja occidentalis (Unk. Golden Cv.) (8') E-16

Thuja occidentalis (Unk. Dwf. Cv.) (2') W-09

Thuja plicata (9') E-02

Thuja plicata (7') E-16

Thuja plicata (18') E-20

Thuja plicata 'Albospicata' (9') E-33

Thuja plicata 'Collyer's Gold' (1') W-O3

Thuja plicata 'Cuphea' (6"-1') Nursery

Thuja plicata 'Cuphea' (6") S-06

Thuja plicata 'Cuphea' (6") W-15

Thuja plicata 'Filicoides' (8") Nursery

Thuja plicata 'Hogan' (15') E-02

Thuja plicata 'Pygmea' (1') L-04

Thuja plicata 'Stoneham Gold' (1') L-04

Thuja plicata 'Stoneham Gold (18") Nursery

Thuja plicata 'Zebrina' (2') E-02

Thuja standishi (10") L-04

Thuja standishi (18") W-13

Thujopsis dolobrata (1') E-16

Thujopsis dolobrata (1') P-04

Thujopsis dolobrata 'Latifolia' (1') P-04

Thujopsis dolobrata 'Variegata' (10") L-04

Thujopsis dolobrata 'Variegata' (2') P-04

Torreya californica (10") L-04

Torreya floridana (1') L-04

Torreya nucifera (15") L 04

Torreya taxifolia (NA 50798) (1') Nursery

Torreya taxifolia (NA 50798) (1') Nursery

Tsuga canadensis (7-17') S-01

Tsuga canadensis (5-10') S-02

Tsuga canadensis (4-18') S-03

Tsuga canadensis 'Albospicata' (4') E-15

Tsuga canadensis 'Albospicata' (5') L-05

Tsuga canadensis 'Albospicata Nana' (2') L-04

Tsuga canadensis 'Curly' (8") Nursery

Tsuga canadensis 'Everett Gold' (8") Nursery

Tsuga canadensis 'Golden Splendor' (2') Nursery

Tsuga canadensis 'Golden Splendor' (15") W-01

Tsuga canadensis 'Katherine Verkade' (4") L-04

Tsuga canadensis 'Katherine Verkade' (4") L-04

Tsuga canadensis 'Coles' Prostrate' (8"T X 2'W) L-04

Tsuga canadensis 'Golden Sprite' (2') L-04

Tsuga canadensis 'Jeddeloh' (15") L-04

Tsuga canadensis 'Krenitski Weeping' (3") L-04

Tsuga canadensis 'Sargent's Weeping' (2') L-04

Tsuga canadensis (Unk. Dwf.) (2') E-14

Tsuga canadensis (Unk. Dwf.) (3') E-14

Tsuga canadensis (Unk. Dwf.) (10") L-08

Tsuga carolinana? (2') S-02

Tsuga diversifolia (2') Nursery

Tsuga dumosa (1') Nursery

Tsuga mertensiana 'Nana Glauca' (3") L-04

Tsuga sieboldii (3" seedlings) Nursery

Tsuga sieboldii (2') L-04

Widdringtonia cedarbergensis (3') Nursery

BOOK NEWS

The stack is high with months of accumulation for so many fascinating new materials reaching the market, and new sources of information - so will probably tend to sketch out the materials more briefly without my usual rambling discourses (sure, sure) - and at best there is no way to list everything in this one issue. Anyway - here we go.

The U. S. National Agricultural Library is offering a free reference sheet of articles, books, journals, and societies related to plants grown from bulbs and corms. The "Bulb Culture AGRI-TOPICS" sheet is free for a self-address stamped envelope from Horticulture Information Center, Room 111, NAL, Beltsville, MD 20705.

Everyone hears of the problem of potentially poisonous plants and good information can be vital for homeowners, gardens centers, etc. The Horticultural Research Institute sponsored a national symposium to address this topic and the results and papers are published in "HRI Poison Plant Symposium Proceedings" - available for $5.00 from HRI, 1250 I Street,

N. W., Suite 500, Washington, D.C. 20005. The most common poison problems for children have come from Philodendron, Dieffenbachia, Swedish ivy, Pilea species, Caladium species and wood-rose. Incidentally we had an excellent horticultural seminar in the department this fall by the director of the national poison control center which is in Durham at the Duke Medical Hospital. In case of any such emergency - call toll free to 1-800-672-1697 (a good number to post for reference) for the best info and advice anywhere on any kind of poisoning problem.

THE ultimate color photo book on ornamental conifers - Conifers by van Gelderen and van Hoey Smith has been published by Timber Press, ISBS, P. O. Box 1632, Beaverton, OR 97075 and is priced at $65 plus $3.00 shipping (1-800-547-7734). This magnificent 365 page book describes 600 species and 2,100 cultivars of conifers and features 1180 color photos. Along with the Krussman Manual of Cultivated Conifers (also from Timber Press) - these are two books no coniferaholic can possibly do without. The photos were taken by Mr. van Hoey Smith, owner of the incredible Tromphenburg Arboretum in Rotterdam, Holland - perhaps my favorite single plant collection anywhere for choice rarities. Mr. and Mrs. van Hoey Smith graciously hosted our NCSU Arboretum (now the JC Raulston Arboretum) tour last summer and I had the great pleasure of doing a short TV interview with him and a garden profile there last fall which will be on national PBS during 1988. We have begun a plant exchange program with the arboretum and it is exciting to know plants from the NCSU Arboretum (now the JC Raulston Arboretum) are now growing there - and we are propagating a wonderful new surprise plant obtained from the Tromphenburg for distribution to N. C. nurserymen this summer - and it could be in the public marketplace in two years.

Another new conifer book is Native and Cultivated Conifers of Northeastem North America - A Guide - by Edward A. Cope (Paper $17.95, Cloth $39.95 - 232 pages from Cornell University Press, 124 Roberts Place, P. O. Box 250, Ithaca, NY 14851-0250). It has keys to 27 genera of conifers and descriptions of 2,700 cultivars are given and arranged in groups by growth rate, shape, and color. Several years ago Cornell University Press also published the ultimate photo reference Insects That Feed on Trees and Shrubs 464 pages, 212 color plates, with information on 650 insect species of importance - $49.50 - an excellent reference for ID. They have now added two other similarly excellent books of interest to professional landscape and nursery people - Diseases of Trees and Shrubs 576 pages, 247 full color plates showing 1,700 illustrations of diseases and injuries that some 350 biological agents and environmental factors cause to more than 250 species of plants - $49.95; and Turfgrass Insects of the United States and Canada 407 pages, 64 color plates showing practically all turfgrass insects - $45.00.

I received a request from a new firm dealing in new books to promote their firm in the newsletter - The Book Tree, Horticultural Publications, 12 Pine Hill Road, Englishtown, NJ 07726 (201-446-3853). Nice list of many books including those above and lots of others.

Another good book source for used books - Brooks Books ("Specializing in Floras and Ornamental Horticulture - particularly Pacific Basin botany"), P. O. Box 21473, Concord, CA 94521.

One of the classic reference books of horticulture - Rehder's Manual of Cultivated Trees and Shrubs Hardy in North America - has just been reprinted in a new edition by Dioscorides Press, 9999 SW Wilshire, Portland, OR 97225 (503-292-0745). 996 pages and $59.95 plus $3.00 shipping. "Rehder's work remains one of the most orderly, comprehensive and easily used inventory with masterful keys to the trees, shrubs, and vines hardy in North America - it lists a total of 486 genera, 2,535 species and 2,685 varieties distributed among 113 families." I became a renewed believer in this book watching Mike Dirr buzz through it hourly on our trip through Germany last summer and his comments that it is still the best single source of keying information.

A fascinating bit of reading was discovered and forwarded to me by Lynn Padgett of NCSU as she researched a story on the history of NCSU for the centennial celebration. In the N. C. Agricultural Experiment Station (of the N. C. College 0f Agriculture and Mechanic Arts) Bulletin #72 (June 1,1890) - the first state university horticulturist, W. F. Massey, wrote "Very little has been done at any of the stations in the line of ornamental horticulture and arboriculture. The florist and nursery interest is annually increasing in importance, and while not neglecting the useful, we are decidedly of the opinion that the Station should do something towards showing our farmers how to make their homes beautiful..We will begin upon the College grounds the formation of an arboretum which we hope will eventually contain all the trees and shrubs which can be grown in this climate. The value of such a collection to the public and to the students cannot be over-estimated." So true and such a pity it was never achieved - we could have a wonderful collection of nearly hundred-year-old specimens to enjoy today. Better late than never though. Interesting that one of the first major collections he obtained was 13 species and cultivars of osier willows used for basket making - including 9 cultivars of Salix viminalis.

Somehow it goes against my grain to promote any informational source that competes with boo Northeastem North America - A Guide - by Edward A. Cope (Paper $17.95, Cloth $39.95 - 232 pages from Cornell University Press, 124 Roberts Place, P. O. Box 250, Ithaca, NY 14851-0250). It has keys to 27 genera of conifers and descriptions of 2,700 cultivars are given and arranged in groups by growth rate, shape, and color. Several years ago Cornell University Press also published the ultimate photo reference Insects That Feed onmic

Literature Microfiche Collection. Old and rare books are often simply not available, or too expensive or just too fragile for practical working use - and in taxonomic research such books are often essential. The Meckler Corporation, 11 Ferry Lane West, Westport, CT 06880-5808 (203-226-6967) engaged Dr. James Mears to produce a master list of the basic non-journal, essential book publications in the field of plant taxonomy. This set of 5,000 (!!!!) chosen reference books is being published on 4" X 6" microfiche cards (over 10,000 of them in the set!!). You can get the entire set by a bargain single payment of $42,500 (it truly is a bargain at a price of only $8.50 per rare reference book). Truly for the one who has everything.

At a little more reasonable price, but still of superlative quality - one should consider the new publication, The Kew Magazine. For two centuries Curtis's Botanical Magazine was the leading English language horticultural journal with superb articles and botanical prints until it ceased publication. This new revival sponsored by Kew Gardens will have the same editorial policy of definitive articles by international plant authorities, excellent botanic art of framing quality, and as the ads state "no advertising - just good plant information". It is distributed in North America on an exclusive basis by Timber Press, 9999 S. W. Wilshire, Portland, OR (503-292-0745). Four issues per year at $50 (back issues are also available for Volumes I-IV 1984-87).

A new U.S. quality gardening publication is about to appear on the market - produced by the people who do the excellent Fine Homebuilding, Fine Woodworking, etc. magazines. Fine Gardening, a 9"X12", fourcolor magazine published six times a year will appear in April, 1988. Subscription is $20/year payable to The Taunton Press, 63 South Main Street, Box 355, Newtown, CT 06470. Their intention is to produce a high quality, advanced gardener publication with articles written by hands-on knowledgeable gardeners. If the publication is half as fascinating as the conversations and correspondence I have had with the associate editor, Mark Kane (the most intelligent and stimulating letters I get - they keep me charged for days), it will be worth many times the price. I wish them well and encourage you to support this noble effort. (Now, if I can only finish the article I promised them months ago - my first writing project in Europe on sabbatical).

A regional organization of interest is the Southern Garden History Society - formed in 1982 with a purpose to stimulate interest in Southern garden and landscape history and in the presentation and restoration of historic gardens and landscapes. The society publishes a quarterly newsletter, Magnolia, and holds annual meetings each spring in different areas of the south. Individual membership is $15 (with other categories available) - Southern Garden History Society, Old Salem, Inc., Drawer F, Salem Station, Winston-Salem, NC 27108.

A new organization just in the proccss of formation is the N. C. Daffodil Society - for those interested in joining to share information and experiences with this excellent garden plant, contact Ms. Alex Hightower, 2405 Glenwood Ave, Raleigh, NC 27608 (919-787-1115). She received the first use of our new computerized plant record system at The NCSU Arboretum (now the JC Raulston Arboretum) as I provided a list of the 310 species and cultivars presently in our collection.

Another group for sharing of information by dedicated gardeners is the Mid-Atlantic Group of the Hardy Plant Society of Great Britian. The Hardy Plant Society was formed to foster interest in herbaceous plants on the widest possible scale and members enjoy an excellent bulletin twice a year, a newsletter, and a seed list of over 1,000 items available only to members. This new Mid-Atlantic Group will also sponsor meetings and tours of private gardens, two plant sales, and local newsletter. Joint membership in both organizations is $12.00 to Joanne Walkovic, 539 Woodland Avenue, Media, PA 19063.

A N. C. nurseryman and teacher of horticulture at Central Piedmont Community College, Elizabeth Harris, is starting a gardener's journal to share her experiences and those who would like to contribute to it. She says "all gardeners love to share. Your questions on what I've shared or what you want to know, your experiences, and your discovered resources will all be appreciated." Six issues will be issued in 1988 and the cost is $6.00 from Elizabeth Harris, Route 1, Box 1746AA, Davidson, NC 28036 (704-892-4553)

A not uncommon, difficult-to-solve problem is how to deal with deer browsing damage to plantings. The Cary Arboretum has conducted research in this area for years and a summary of current control options is available in a 12 page publication for $1.50 from: The Dept. of Wildlife Resources, The Cary Arboretum, Box AB, Millbrook, NY 12545. (A recommendation along this line from Richard Bir's excellent Mountain Nursery Newsletter is to use bars of soap. "Use of highly perfumed small bars of soap that are used in hotels. The cost ranges from 2-5 cents per bar. Leave the wrapper on the soap, drill a hole through the soap and wrapper and hang it on the tree at browsing height. Use insulated copper wire to fashion a hook and hang a bar of soap on each young tree. Soap is effective for four to six months or longer depending on the weathering factors and size of the soap."

Repeatedly I am frustrated by my typically American monolinguistic ability - in particular wishing I were fluent in German where the best current horticultural literature in the world is being published today. Two excellent new books for those who have worked hard enough to become fluent in German - Outdoor Ornamental Perennials by Jelitto, Schacht, and Fessler (Eds.) (683 pages, 1000 plates with 645 in color, price DM290, from Eugen Ulmer GmhH & Co., Stuttgart, GFR - ISBN 3-8001-6156-7). Twelve collaborators have produced a comprehensive guide to every winter-hardy herbaceous perennial grown in northern Europe with over 5,000 species covered - with further expansion to existing cultivars. Even for non-German fluent "readers", the 1000 plates would give good visual information and an index provides an alphabetical list of German plant names and their Latin equivalents. Another book, Tree Nursery Management (3rd Ed.) by Bartels, Husung, Mareis, Meiss, Meyer, and Pardatscher must be magnificent for anyone in commercial nursery production. The Germans have probably the best nursery industry in the world and the announcement states "A fully illustrated comprehensive textbook designed for students and practical workers. This revised edition incorporates recent scientific and technological developments." Published by Der Baumschulbetrieb, Stuttgart, GFR, 600 pages, 158 DM. Sigh!

A whole listing of gardening and plant related titles is available in a catalog from: University Press of Virginia, Box 3608, University Station, Charlottesville, VA 22903. Obviously heavy on Jefferson and Virginia Gardens, but others as well. I particularly would like to read the new book Andre and Francois Michaux - the first full-length biography of two of the most significant figures in the botanical history of France and the United States. Andre was the first botanical explorer to travel widely in North America and the first to discover and describe hundreds of American plants such as our native flame azalea - and the first to introduce such important plants as camellias, Indica azaleas, and crepe myrtles (he almost created the basis of the southern garden right there). The book is 420 pages $27.50 (ISBN 0-8139-1107-9).

Another Jefferson book is published by Fulcrum, Inc., 350 Indiana St., #510, Golden, CO 80401 (1-800-992-2908) - The Farm and Garden Books of Thomas Jefferson - a new edition and format of the 60 years of gardening records and correspondence of Jefferson. 400 pages, clothbound, $20.00. (At this moment of furiously pounding on a keyboard with a stiff neck, madly trying to do a newsletter when I would rather be out in the arboretum - I particularly like his quote "Have you become a farmer? Is it not pleasanter than to be shut up within four walls and delving eternally with the pen?" Another book from many in this fine catalog that hits a topic important to me is On Seeing Nature by Steven Meyers (ISBN 1-55591-008-4, $15.95, 150 pages). In several courses I give a lecture on the importance of the ability to "See" things (also beautifully discussed in Anne Dillard's Pilgrimage to Tinker Creek). "To see nature is an art; it is an ability often taken for granted, and one must learn to see rather than merely look. Only when we tap into a childlike sense of wonder do most of us see the world around us with freshness and clarity." I am convinced we are a generation blinded by TV, badly needing the ability to observe and to be aware.

A major problem in gardens is producing good permanent labeling systems. "Permanent Labels for Identifying Plant Materials" by Dwight Wolfe and Gerald Brown - HortScience 22(4):662 (August 1987) has an excellent solution. They promote a system of using a technique developed by animal scientists for tagging cattle. Most nursery marking pens will fade within a year - whereas a Ritchey Marking Paint (inexpensively available at farm supply outlets) will remain clear for at least six years. The technique is one-tenth the cost of engraver labels.

Those who travel a great amount may find useful the new The American Garden Guidebook (ISBN 0-87131-499-1) - a guide to gardens of eastern North America - 28 states and 4 Canadian provinces listing 339 gardens in a 294 page paperback at $8.95. Available from M. Evans and Company, Inc., 216 East 49 Street, NY, NY 10017 (212-688-2810).

In the world of millions of mail order catalogs which overflow my mailbox daily - one that particularly fascinated me was one devoted entirely to "Weather" as a topic - meterological equipment. rain gauges, handcrafted weathervanes, sundials, weather books (including a pop-up sundial book), and many other intriguing gadgets in all price ranges. (Will Hooker badly wants a beautiful bronze equatorial sundial in the catalog to display in the arboretum for his teaching of the geometry of the cosmos - anyone interested in donating it as a gift or memorial?? Priced at $225) Wind & Weather, The Albion Street Water Tower, P. O. Box 2320, Mendocino, CA 95460 (707-937-0323). I liked the quote in the catalog "Sunshine is delicious, rain is refreshing, Wind braces up, snow is exhilarating. There is no such thing as bad weather, Only different kinds of good weather." - Ruskin. (Ruskin never tried to garden through the winter of 1985, nor England in 1987!)

In the last newsletter I published a list of my preferences for essential information sources for plants in North Carolina - and already there are two new ones (actually one is a newer expanded edition of one listed) I will include on that list in the future. The new revision is Native Trees, Shrubs, and Vines for Urban and Rural America by Gary Hightshoe of Iowa State University (ISBN 0-442-23274-8, 832 pages, 700 line drawings, 96 color plates, $79.95 - from Van Nostrand Reinhold, Mail Order Department, P. O. Box 668, Florence, KY 41042-9979). A really superb book with vast amounts of good, useful information well organized and presented. It is a bit unfortunate the price is as high as it is, since that will likely limit the audience of use from what it should be for such a good book. The other new book that I am very much taken with is Identification. Selection and Use of Southern Plants for Landscape Design by Neil Odenwald and James Turner (ISBN 0-87511-816-8, 660 pages, thousands of line drawings and maps, available for $39.95 from Claitor's Publishing Division, 3165 S. Acadian at I-10, P. O. Box 3333, Baton Rouge, Louisana 70821 - 1-800- 535-8141). Covers over 1,000 species of trees, shrubs, vines, perennials, wildflowers, ferns, water plants, groundcovers and grasses. Not space to say all I would like about this book except I really like it - good layout and feel, tons of information - it seems to be the long needed, good practical gardener's book for reference to landscape plants in the South. I wish I had written it.

After my discussion of the horticultural murder mysteries in #15, I was presented another such book by Debra Dalton (acting chairman of Landscape Architecture at NCSU) to share with readers. Garden of Malice by Susan Kenney (Ballantine Mystery - $2.95 Paperback, ISBN 0-345-31712-2,1983) has this jacket description "When Roz Howard, a young professor of English at Vassar, is offered the coveted job of editing the diaries and letters of the famous author Lady Viola Montfort-Snow, she cannot believe her good fortune. She sets off for England and Montfort Abbey, also eager to see for herself the gardens that surround Lady Montfort-Snow's medieval manor. True to expectation, the gardens are hauntingly exquisite and the papers full of wonderful glimpses into the great lady's private life. But then Roz discovers, living on the grounds of the estate, a group of Lady Montfort-Snow's friends and relatives. They claim that they would rather die than see the papers published. And Roz soon suspects that they would rather kill, too ...." Inside the cover more hype lures the reader on - "One of these people is the root of evil in the GARDEN OF MALICE. Is it HUGH - Roz's employer and Lady Viola's notoriously ruthless son? HUGH OR BEATRICE BADGETT - the "salt-of-the-earth" scientist? Or his wife, who is ashamed of his humble beginnings? CORY OR STELLA - the estate gardeners, who have access to very powerful insecticides or ALAN - the handsome painter whom Roz would love to trust . . . if only she dared?" Can you stand the suspense? (Of course there could be no possible connection to Sissinghurst and Vita Sackville-West by the author, could there? A disclaimer by the editor states, of course not.)

It was a surprise to open a copy of Pacific Horticulture magazine recently and see the most beautiful of our Doug Bethune custom designed benches in The NCSU Arboretum (now the JC Raulston Arboretum) staring at me from a page of advertisements. A N.C. firm - Back Forty Nursery, Inc., Outdoor Furniture Division, Rt. 2, Box 1267, Oxford, N.C. 27565 ($2.00 for color catalog) apparently liked it so much they decided to copy it for commercial sale nationwide. It is the individual seat which is located in behind the yuccas where the "secret garden" existed till the winter of '85 took away the evergreen oak canopy - and sells for $225 in cedar.

Another of the specialized category catalogs received is the Great Plains Country Almanac catalog of "country" materials - everything from toys to full scale commercial grain drills. I was most intrigued by two children's games - The Farming Game which "challenges your ability to manage, survive, and grow in the demanding environment faced by farmers every day. Test your skills with planting, financing, harvesting, the weather, equipment, and more. Created by a farmer while on his tractor, The Farming Game provides a deeper appreciation of the situation farmers face daily ($21.95)." Reminds me of a story often told by a neighbor as I grew up on a wheat farm in Oklahoma - when asked what he would do if given a million dollars, he just said he'd probably just keep farming till it was all gone. A rough life today - and very sad our national government has sold this base of our society down the political drain. Another game that our landscape faculty has looked at in some horror is "Construction Playmat" - "An entire kid-size subdivision ready for development. Begin excavating the vacant lots of our 4' X 5' play mat or finish the excavations under way. Put in the necessary roads. Install the necessary sewer and water mains. Work the concrete foundations or finish the framing and roofing and siding. Then finish the landscaping to owner specifications ($16.95)". The mat looks like North Raleigh and is somewhat frightening to think of indoctrinating kids with a total development mentality - can a treed lot remain anywhere today for public benefit and enjoyment in the future? For your very own catalog write: Great Plains Country

Almanac, P. O. Box 266, 108 W. 2nd, Assaria, KS 67416 (913-667-4755).

Well, the pile is still deep and dozens of more things to cover - guess I must hold them over till next time. In conclusion, the following article given to me by Kathy Neely has nothing to do with horticulture - but my experiences in teaching (as well as producing a notable number of bloopers myself over my career) have shown me well how true such an article really is. It is the funniest thing I have read this year - with tears rolling down my cheeks the first time through - and heavens knows the world today needs all the laughs it can get. Enjoy.

THE WORLD ACCORDING TO STUDENT BLOOPERS

by Richard Lederer, St. Paul's SchooI.

One of the fringe benefits of being an English or history teacher is receiving the occasional jewel of a student blooper in an essay. I have pasted toqether the following "history" of the world from certifiably genuine student bloopers collected by teachers throughout the United States. Read carefully, and you will learn a lot.

The inhabitants of ancient Egypt were called mummies. They lived in the Sarah Dessert and traveled by Camelot. The climate of the Sarah is such that the inhabitants have to live elsewhere, so certain areas of the dessert are cultivated by irritation. The Egyptians built the Pyramids in the shape of a huge triangular cube. The Pramids are a range of mountains between France and Spain.

The Bible is full of interesting caricatures. In the first book of the Bible, Guiness, Adam and Eve were created from an apple tree. One of their children, Cain, once asked, "Am I my brother's son?" God asked Abraham to sacrifice Isaac on Mount Montezuma. Jacob, son of Isaac, stole his brother's birth mark. Jacob was a patriarch who brought up his twelve sons to be patriarchs, but they did not take to it. One of Jacob's sons, Joseph, gave refuse to the Israelites. Pharaoh forced the Hebrew slaves to make bread without straw. Moses lead them to the Red Sea where they made unleavened bread, which is bread made without any ingredients. Afterward, Moses went up on Mount Cyanide to get the ten commandments. David was a Hebrew king skilled at playinq the liar. He fought with the Philatelists, a race of people who lived in Biblical times. Solomon. one of David's sons, had 500 wives and 500 porcupines.

Without the Greeks we wouldn't have history. The Greeks invented three kinds of columns - Corinthian, Doric, and Ironic. They also had myths. A myth is a female moth. One myth says that the mother of Achilles diped him in the River Stynx until he became intollerable. Achilles appears in The Illiad, by Homer. Homer also wrote The Oddity, in which Penelope was the last hardship that Ulysses endured on his journey. Actually, Homer was not written by Homer but by another man of that name. Socrates was a famous Greek teacher who went around giving people advice. They killed him. Socrates died from an overdose of wedlock. In the Olympic Games, Greeks ran races, jumped, hurled the biscuits, and threw the java. The reward to the victor was a coral wreath. The government of Athens was democratic because people took the law into their own hands. There were no wars in Greece, as the mountains were so high that they couldn't climb over to see what their neighbors were doing. When they fought with the Persians, the Greeks were outnumbered because the Persians had more men.

Eventually, the Ramons conquered the Geeks. History calls people Romans because they never stayed in one place for very long. At Roman banquets, the guests wore garlics in their hair. Julius Caesar extinguished himself on the battlefields of Gaul. The Ides of March murdered him because they thought he was going to be made king. Nero was a cruel tyranny who would torture his poor subjects by playing the fiddle to them.

Then came the Middle Ages. King Alfred conquered the Dames, King Arthur lived in the Age of Shivery, King Harold mustarded his troops before the Battle of Hastings, Joan of Arc was cannonized by Bernard Shaw and victims of the Black Death grew boobs on their necks. Finally, Magna Carta provided that no free man should be hanged twice for the same offense. In midevil times most of the

people were alliterate. The greatest writer of the time was Chaucer, who wrote many poems and verses and also wrote literature. Another tale tells of William Tell, who shot an arrow through an apple while standing on his son's head.

The Renaissance was an age in which more individuals felt the value of their human being. Martin Luther was nailed to the church door at Wittenberg for selling papal indulgences. He died a horrible death, being excommuinicated by a bull. It was the painter Donatello's interest in the female nude that made him the father of the Renaissance. It was an age of great inventions and discoveries. Gutenberg invented the Bible. Sir Walter Raleigh is a historical figure because he invented cigarettes. Another important invention was the circulation of blood. Sir Francis Drake circumcised the world with a 100-foot clipper.

The government of England was a limited mockery. Henry VIII found walking difficult because he had an abbess on his knee. Queen Elizabeth was the "Virgin Queen". As a queen she was a success. When Elizabeth exposed herself before her troops, they all shouted "hurrah". Then her navy went out and defeated the Spanish Armadillo. The greatest writer of the Renaissance was William Shakespear. Shakespear never made much money and is famous only because of his plays. He lived at Windsor with his merry wives, writing tragedies, comedies, and errors. In one of Shakespear's famous plays, Hamlet rations out his situation by relieving himself in a long soliloquy. In another, Lady Macbeth tries to convince Macbeth to kill the King by attacking his manhood. Romeo and Juliet are an example of a heroic couplet. Writing at the same time as Shakespear was Miguel Cervantes He wrote Donkey Hote. The next great author was John Milton. Milton wrote Paradise Lost. Then his wife died and he wrote Paradise Regained.

During thepeople who lived in Biblical times. Solomon. one of David's sons, had 500 wives and 500 porcupines.

Without the Greeks we wouldn't have history. The Greeks invented three kinds of columns - Corinthian, Doric, and Ironic. They also had myths. A myth is a female moth. One myth says that the mother of Achilles diped him in the River Stynx until he became intollerable. Achilles appears in The Illiad, by Homer. Homer also wrote The Oddity, in which Peir cabooses, which proved very fatal to them. The winter of 1620 was a hard one for the settlers. Many people died and many babies were born. Captain John Smith was responsible for all this.

One of the causes of the Revolutionary Wars was the English put tacks in their tea. Also, the colonists would send their parcels through the post without stamps. During the War, the Red Coats and Paul Revere was throwing balls over stone walls. The dogs were barking and peacocks crowing. Finally, the colonists won the War and no longer had to pay for taxis. Delegates from the original thirteen states formed the Contented Congress. Thomas Jefferson, a Virgin and Benjamin Franklin were two singers of the Declaration of Independence. Franklin had gone to Boston carrying all his clothes in his pocket and a loaf of bread under each arm. He invented electricity by rubbing cats backwards and declared, "A horse divided against itself cannot stand." Franklin died in 1790 and is still dead.

George Washington married Martha Curtis and in due time became the Father of Our Country. The Constitution of the United States was adopted to secure domestic hostility. Under the Constitution the people enjoyed the right to keep bare arms. Abraham Lincoln became America's greatest Precedent. Lincoln's mother died in infancy, and he was born in a log cabin which he built with his own hands. When Lincoln was President, he wore only a tall silk hat. He said, "In onion there is strength". Abraham Lincoln wrote the Gettysbug Address while traveling from Washington to Gettysburg on the back of an envelope. He also freed the slaves by signing the Emasculation Proclamation, and the Fourteenth Amendment gave the ex-Negros citizenship. But the Clue Clux Clan would torcher and lynch the ex-Negros and other innocent victims. It claimed it represented law and odor. On the night of April 14, 1865, Lincoln went to the theater and got shot in his seat by one of the actors in a moving picture show. The believed assinator was John Wilkes Booth, a supposingly insane actor. This ruined Booth's career.

Meanwhile in Europe, the enlightenment was a reasonable time. Voltaire invented electricity and also wrote a book called Candy. Gravity was invented by Isaac Walton. It is chiefly noticeable in the Autumn, when the apples are falling off the trees. Bach was the most famous composer in the world, and so was Handel. Handel was half German, half Italian, and half English. He was very large. Bach died from 1750 to the present. Beethhoven wrote music even though he was deaf. He was so deaf he wrote loud music. He took long walks in the forest even when everyone was calling for him. Beethoven expired in 1827 and later died for this.

France was in a very serious state. The French Revolution was accomplished before it happened. The Marseillaise was the theme song of the French Revolution, and it catapulted into Napoleon. During the Napoleonic Wars the crowned heads of Europe were trembling in their shoes. Then the Spanish gorillas came down from the hills and nipped at Napoleon's flanks. Napolean became ill with bladder problems and was very tense and unrestrained. He wanted an heir to inherit his power, but since Josephine was a baroness, she couldn't bear children.

The sun never set on the British Empire because the British Empire is in the East and the sun sets in the West. Queen Victoria was the longest queen. She sat on a thorn for 63 years. Her relining years and finally the end of her life were exemplatory of a great personality. Her death was the final event which ended her reign.

The nineteenth century was a time of many great inventions and thoughts. The invention of the steamboat caused a network of rivers to spring up. Cyrus McCormick invented the McCormick raper, which did the work of a hundred men. Samuel Morse invented a code of telepathy. Louis Pasteur discovered a cure for rabbis. Charles Darwin was a naturalist who wrote the Organ of the Species. Madman Curie discovered radium. And Karl Marx became one of the Marx brothers. The First World War, caused by the assignation of the Arch-Duck by a surf, ushered in a new error in the anals of human history."

And sadly, there the story ends - with 70 years of further possibilities.

NEW CATALOGS AND PLANT SOURCES OF INTEREST

Once again I have extended other sections of the newsletter greater than expected and am fighting the desire to include the large stack of materials here and ramble on about them at length when the newsletter is already too long. I'll try to restrain myself - but difficult.

The Anderson Horticultural Library of the Minnesota Landscape Arboretum has published a new reference tool for sources of plants and seeds. Anderson's Horticultural Library's Source List of Plants and Seeds lists over 20,000 commonly and uncommonly grown plants giving sources from over 200 selected U. S. and Canadian nurseries. All sources are from 1987 catalogs; the plants are listed by botanical names with a cross-reference list of common names; nurseries are listed with full address and telephone number with a state-by-state geographical breakdown. As examples, it lists 2,100 Rhododendron, 1,800 Hemerocallis, 250 Acer palmatum, 47 Fraxinus, etc. Sources for trees, shrubs, vines, perennials, annuals, bulbs, herbs, and vegetables are given. Send $29.95 to: Anderson Horticultural Library, Minnesota Landscape Arboretum, 3675 Arboretum Drive, Box 39, Chanhassen, MN 55317.

Mitsch Nursery has long had an outstanding list of fine plants. Last year Bob and Dianne Fincham (active conifer producers) purchased the nursery and are rapidly expanding the already fine line of materials. They are also starting a most informative newsletter about conifers and other plants of the firm which will be issued quarterly to customers. For a $2.00 catalog and sample of the newsletter - write to Mitsch Nursery, Inc., 6652 S. Lone Elder Road, Aurora, OR 97002-9399 (503-266-9652).

For a huge list of perennials and azaleas - send $2.00 for a catalog to: The Crownsville Nursery, P O Box 797, Crownsville, MD 21032 (301-923-2212). They also have a sales area and display garden of over a thousand different perennials - located at the corner of Generals Highway (MD Rt 178) and Honeysuckle Lane - near US Rt 50 in Maryland.

Another perennials operation with a huge array of plants nearer the NC Triangle area is Pine Knot Farms, Route 1, Box 146-A Clarksville, VA 23927 (just over the state line) (804-252-1990). No mailorder and normally wholesale only, but during the peak spring season they also sell at the site and it's worth a pleasant drive to see the many offerings - phone first to see when open and what the hours are. The nursery is operated by the family of one of my most enthusiastic nursery students last fall - Helen Tyler - one of those totally immersed-in-plants persons you love to see but rarely have the pleasure of having in class. She's currently in the process of propagating the entire arboretum (well, perennials only as she's somewhat doubtful yet about the merit of my woodies, but I'm working on her) to take back to Virginia.

Local firms which have greatly expanded offerings recently and merit another mention here are Niche Gardens. Rt. 1, Box 290, Chapel Hill, NC 27514 (919-967-0078) - run by Kim and Bruce Hawks. They are rapidly acquiring a wide-spread reputation with out-of-state visitors putting them on their "must see" list for N.C. horticultural sites of significance. They have a fine mail-order list ($1.00), an extensive catalog and descriptive plant list ($3.00), or sales at the site with a phone appointment only. Also, Montrose Nursery, P. O. Box 957, Hillsborough, NC 27278 (919-732-7787) has greatly expanded the listing of perennials and bulb plants available with the addition of talented Doug Ruhren in the business to compliment Nancy Goodwin's already superb knowledge and efforts. They offer the finest array of cyclamen anywhere - and most significantly, these are all nursery propagated and grown plants. Throughout Europe and the Middle East where these bulbs (sic) are native, collection from the wild is often illegal and is sharply endangering the survival of the various species. A recent report showed that export from Turkey to Holland alone increased from a half-million bulbs in 1978 to four million by 1984. Hundreds of thousands of these bulbs make their way to the U.S. where sales help support the continuing destruction overseas. Montrose Nursery is the only nursery in the U.S. propagating these beautiful choice plants in quantity and deserves great support for its efforts. If you are not aware of the superb qualities of cyclamen as a garden subject in N.C. (and anywhere in zones 5-9) you should try a few and get hooked - wonderful.

A new nursery has also started in the local area specializing in a comprehensive array of nursery propagated ferns of all kinds. For a copy of the list of plants for sale write Mr. Roger Boyles, TakeRoot, 4 Blakes Drive, Pittsboro, NC 27312 - mailorder and visitors by appointment only (919-967-9515).

SOURCE LIST OF NATIVE PLANTS

Agua Fria Nursery

1409 Agua Fria St

Santa Fe, NM 87501 (505) 983-4831

Applewood Seed Co.

5380 Vivian

Arvada, CO 80002 (303) 431-6283

Bernardo Beach Native Plant Farm

Star Route 7 Box 145

Veguita, NM 87062

Retail Outlet: 520 Montano NW

Albuquerque, NM (505) 345-6248

Clyde Robin Seed Co., Inc.

P.O. Box 2855

Castro Valley, CA 94546 (415) 581-3467

Curtis & Curtis Seed Co.

Star Route, Rox 8A

Clovis, NM 88101 (505) 762-4759

Dean Swift

P.O. Box B

Jaroso, CO 81138 (303) 672-3739

Dry Country Plants

5840 N. Main

Las Cruces, NM 88001 (505) 522-4434

E & H Products

71-301 Highway 111, Suite #1

Rancho Mirage, CA 92270

Environmental Seed Producers

P.O. Box 5904

El Monte, CA 91734 (818) 442-3330

ForestFarm.

990 Tethrow Road

Williams, OR 97544

Green Horizons

218 Quinlan Suite 571

Kerrville, TX 78028 (512) 257-5141

High Altitude Gardens

P.O. Box 4238

Ketchum, ID 83340 (208) 726-3221

J. L. Hudson Seed Co.

P.O. Box 1058

Redwood City, CA 94064

Las Pilitas Nursery

Star Route, Box 23X

Santa Margarita, CA 93453

Los Patios, Inc.

P.O. Box 1346

Corrales, NM 87048 (505) 898-5909

Moon Mountain Wildflowers

P.O. Rox 34

Morro Bay, CA 93442 (8O5) 772-2473

Native Plants, Inc.

9180 S. Wasatch Way

Sandy, UT 84092 (801) 943-3288

Nature's Way Wholesale Nursery

8905 Edith Blvd. NE

Albuquerque, NM 87113 (505) 898-9258

New Mexico Cactus Research

P.O. Box 787

Belen, NM 87002

New Mexico Native Plant Nursery

309 West College

Silver City, NM 88061 (505) 537-2165

Northplan Seed Inc.

P.O. Box 9107

Moscow, ID 83843 (208) 882-8040

Plants of the Southwest

1812 Second St.

Santa Fe, NM 87501 (505) 983-1548

Southwest Native Seeds

P.O. Box 50503

Tucson, AZ 85703

S & S Seeds

P.O. Box 1275

Carpinteria, CA 93013 (805) 684-0436

Stock Seed Farms, Inc.

R.R. #1 Box 112

Murdock, NE 68407 (402) 867-3771

Weddle Native Gardens

3589 G Road

Palisade, CO 81526 (303) 464-5549

Wildland & Native Seed Foundation

2402 Hoffman Drive NE

Albuquerque, NM 87110 (505) 298-1980

Wild Seed

P.O. Box 27751

Tempe, AZ 85282 (602) 968-9751

Most nurseries will carry an assortment of natives. Ask your nurseryman.

Additional sources of native plants may be found in the following:

Nursery Sources of Native Plants and Wildflowers

New England Wildflower Society

Garden in the Woods,

Hemenway Road

Framingham, MA 01701 ($3.50 ppd.)

Source of Native Plants

Soil Conservation Society of America

7515 Ankenny Road NE

Ankenny, IA 50021 ($3.50 ppd.)

Texas Native Plant Directories

Texas Dept. of Agriculture

P.O. Box 12847

Austin, TX 78711.

1987 CARNIVOROUS PLANT NURSERY SOURCES

(from Carnivorous Plant Newsletter, Vol. 16, March 1987)

Note: All individuals or organizations selling, trading, or buying CP are advised to be cognizant of certain restrictions under the U.S. ESA and international CITES for certain species (see editorial, CPN *12* 3, 1983)

Cyril G. Brown

65 Highfield Cres.

Hornchurch

Exex RM 126PX

Burleigh Park Orchid Nursery

Ian and Pat Walters,

1419 Ross River Road,

Kelso, TOWNSVILLE, QLD. 4815. Australia

Phone: 077 740008

Nepenthes

Carnivorous Gardens

P.O. Box 318

Acacia Ridge 4110

Brisbane, Queensland

Australia

Cost: $ .75

Native Seed

The Straits Aquariums Pte. Ltd.

Lim Ah Pin Road

Box 626

Singapore, 9154 Malayasia

Tels: 48 17777 & 48 19911

Malaysian Nepenthes

Country Hills Greenhouse

Rt. 2

Corning, OH 43730

Cost: $2.50 refundable with order

Nepenthes (20 varieties)

Exoticana Seeds

P.O. Box 184

Greytown 3500, South Africa

Native CP Seed

Heldon Nurseries

Ashbourne Rd.

Spath

Uttoxeter ST145AD

Hinode-Kadan Nursery

2735 Nakanogo, Hacijyot

Hachihyo-Island

Tokyo 100-16 Japan

Cost: International Reply Coupon

Byblis, Cephalotus, Drosera, Pinguicula, Nepenthes, Utricularia

Hungry Plants

1216 Cooper Drive

Raleigh, NC 27607

(919) 851-6521

Cost: $.50

Byblis, Cephalotus, Dionaea, Drosera, Darlingtonia, Nepenthes, Pinguicula, Roridula, Sarracenia, Sphagnum and Utricularia. Tissue cultures of most stock.

Marston Exotics

Spring Gardens

Frome

Somerset, England

Street 42192

Cost: 50 p

Aldrovanda, Byblis, Cephalotus, Darlingtonia, Dionaea, Drosera, Nepenthes, Pinguicula, Sarracenia, Utricularia, Seed

Lee's Botanical Gardens

12731 SW 14th St.

Miami, FL 33184

(305) 223-0492

B- S- T- All Varieties of CPs

Cedar Ridge Nurseries

R.D. #1, Cedar Ridge RD.

Allison Park, PA 15101

(412) 443-9073

Nepenthes

Milingimbi Nursery

69 Pringle Ave.

Belrose, NSW

2085 Australia

Byblis, Cephalotus, Drosera, Dionaea, Nepenthes, Utricularia, Sarracenia, Pinguicula

Orgel's Orchids

Rt. 2, Box 90

Miami, FL 33187

(303) 233-7168

Byblis, Dionaea, Drosera, Nepenthes, Pinguicula, Sarracenia, Utricularia

Peter Pauls Nurseries

Canandaigua, NY 14424

(716) 394-7397

Sarracenia, Dionaea, Drosera, Utricularia, Darlingtonia, Nepenthes seed, Pinguicula, live Sphagnum

ISRA Exotics

P.O. Box 1200

B. S. B. Brunei, Borneo, SE Asia

Nepenthes

Renate Parsley

8 Langton Rd.

Mowbray 7700

South Africa

Native CP Seed

Sarracenia Nurseries

Links Side

Courtland Ave.

Mill Hill, London, NW 7, England

South West Seeds

Doug & Vivi Rowland

200 Spring Rd.

Kempston, Bedford MK428ND England

Alain Christophe

37, Avenue Turgot

77330 Ozoir-la-Ferriere

FRANCE

Cost: $7s

S. African Drosera Seed

Thysanotus-Seed-Mailorder

Postfach 44-8109

2800 Bremen 44

West Germany

Inquire for catalog cost

Byblis, Darlingtonia, Dionaea, Drosera, Drosophyllum, Nepenthes, Pinguicula, Sarracenia, Utricularia

W.T. Neale & Co., Ltd.

B.M. & S. Lamb

16/18 Franklin Rd.

Worthing, Sussex, BN132PQ

England

Inquire for catalog cost

Sarracenia, Dionaea, Darlingtonia seed

Harold Weiner

Kaiserstr. 74

3250 Hameln 1

West Germany

Inquire for catalog cost

Aldrovanda, Byblis, Cephalotus, Dionaea, Drosophyllum, Drosera, Pinguicula, Sarracenia, Nepenthes

World Insectivorous Plants

P.O. Box 70513

Marietta, GA 30007

(404) 973-1554

Cost: $1.00

Dionaea, Drosera, Drosophyllum, Nepenthes, Sarracenia, Pinguicula, Byblis liniflora, Utricularia

Marie's Orchids and CP

6400 Cedarbrook Dr.

Pinellas Park, FL 33565

Nepenthes, Heliamphora

Roy Young

79, Pearcroft Rd.

Leyton Stone

London, ELL. 44P

England

(01) 556-8048

Cost: 1 International Reply Coupon

Seed of CP

The co-editors and CPN do not endorse any of the above vendors. This is being provided only as a service to our subscribers. Information correct at time of receipt. Please contact sources directly for further information. Not responsible for omissions. Inquiries for inclusion in future lists should include a catalog/price list of CP available, cost of catalog and address. Send information to J.A. Mazrimas, 329 Helen Way, Livermore, CA 94550.

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1985 U.S. NATIONAL ARBORETUM

PLANT EXPLORATION IN THE REPUBLIC OF KOREA, SOUTHWEST COAST AND ISLANDS

FINAL REPORT:

T. R. Dudley and B. R. Yinger[1]

From August to November 1985, the U.S. National Arboretum conducted the second phase of its five-year program of plant exploration in Korea under the auspices of the Friends of the National Arboretum, Inc. with financial support from several institutions and individuals. A generous research grant frorn the Holly Society of America, Inc. (HSA), helped to make this important project possible. A preliminary report of the results of this exploration was published in the Holly Society Journal 4(1):19-25, 1986. This final report comprises a summary of expedition activities and an inventory of all Ilex germplasm and herbarium specimen collections.

One of the primary objectives of this expedition to the southwest coast and islands of Korea was to document the species of Ilex from as many localities as possible within our target area. Documentation was accomplished in two ways: collection and processing of herbarium specimens together with written observations and photographs and collection of germplasm (seed, cuttings or seedlings) for propagation, evaluation, selection and ultimate distribution by the HSA and other participating institutions and organizations. The expedition had similar documentation procedures for other genera on our list of target species. All seed collections were documented with voucher herbarium specimens which are, of course, the bases of the identity and origin of the germplasm introductions. Unfortunately. because of very heavy scale infestations, little vegetative cutting material was introduced. However, hundreds of Ilex cornuta Lindley seedlings collected from beneath a superior specimen as well as large quantities of documented seed were transmitted to Dr. Will Witte of the University of Tennessee on behalf of the HSA.

The 320 germplasm collections of the 1985 Korean expedition have been distributed to the intended recipients and include large amounts of Ilex seed. The nearly 900 herbarium specimen collection numbers (some collected in multicate, over 2,000 actual specimens) have been sorted, labeled and distributed to the herbaria of the three participating institutions and to the Seoul National University. The 258 pages of field collection data have been collated, proofread and distributed to interested parties. The master file is stored on word processor diskettes.

The vegetation of the Republic of Korea, like that of much of Asia, is in poor overall condition because of wartime and post-war destruction, coppicing for fuel, deforestation and reforestation with exotic species, intensive agriculture, predations of domestic and feral goats, collecting of plants for horticultural and medicinal purposes and the pressures of increasing human population. Yet, the floristic composition is rather rich: the mosaic panorama of unglaciated topography and microhabitats on the southwest coast and offshore islands have allowed a unique diverse flora to develop. This flora has not been adequately explored nor sampled. Throughout the nineteenth and twentieth centuries, Korea was largely ignored by Western botanists; the work that has been done has been concentrated on the mountains of the east and north, and in Cheju and Ullung.

Collecting Sites - Itinerary

1. Pyonsan Peninsula and Nearby Sites

(ca. 35_35' to 35_45' N, 126_28' to 126_40' E)

This mountainous peninsula, which extends westward fronn the mainland into the Yellow Sea, is a relatively undisturbed, unglaciated mainland coastal site. Its rich flora includes relict populations of characteristically southern species approaching the northern limit of their range on the mainland including the most northern modern sites of distribution of Ilex cornuta Lindl. & Paxton and Ilex crenata Thunb., two hollies of great importance to the American nursery industry. Both species are grown extensively in commerce but are insufficiently hardy to be reliable features in the landscape of much of the northeastern United States. Both species are now rare in the wild in most of Korea and close to extinction on the mainland. Fortunately, many plants remain as cultivated specimens in the schoolyards and gardens of government buildings and private houses. These specimens are reliably documented as having been dug from the wild and replanted, mostly within the last thirty years. However, these plants are in great danger as all of Korea is being transformed by rebuilding. Even in the tiniest rural villages the government is sweeping away the traditional buildings and replacing them with alarming ersatz pseudo-Italianate chalets. Fortunately, most of the hollies in the gardens were transplanted recently enough so the owners or neighbors recall where the plant was dug in the wild. Accordingly, we can expect that the large quantities of seed gathered from such plants will express a wide range of geographical and genotypical variation.

This area is also the northern-most station for Machilus thunbergii Sieb. & Zucc. (Persea thunbergii (Sieb. & Zucc.)Kosterm.) still growing as wild fertile plants on the mainland. This very beautiful broad-leaved evergreen tree promises to be significantly hardier than material of Japanese provenance now known in cultivation. At Yuyu Dong in the mountainous interior of the peninsula, several other highly desirable species still grow in relative profusion such as a very extensive population of Viburnum sargentii Koehne. Seed of a rare and highly ornamental arborescent dogwood, Cornus walteri Wanger., was collected here as well as Actinidia arguta Planch. with unusually large, very delicious fruit. The Korean endemic Asarum maculatum Nakai was discovered growing here, representing a new plant record for the west coast of Korea. Many other interesting plants were encountered along the coast on the south side of the peninsula such as a population of Ligustrum quihoui var. latifolium Nakai holding excellent foliage in late summer despite its growing in thin sandy soil on rocks just above the high tide line. Malus baccata Borkh. with clean superior foliage was collected at a nearby highly stressful site. Just north of the peninsula in Kimje Gun, extensive colonies of Pyrus calleryana var. fauriei (Schneid.)Rehder were found growing in very poor soil at seaside; large seed collections were made.

Selected Collections

Campsis grandiflora (Thunb.) K.Schum. - A very beautiful woody climber with very large flowers in shades of orange, salmon and apricot; known on the west coast of Korea only in cultivation where it is common and variable. It is likely that it was originally a native plant in this region now extinct in the wild and not regenerating, probably because its pollinator is extinct and because of overcollecting.

Carpinus tschonoskii Max. - A beautiful tall-growing hornbeam for evaluation as a small shade tree.

Eurya japonica Thunb. - A col]ection of this beautiful but tender broad-leaved evergreen shrub from near the northern limit of its range on the mainland with potential for enhanced cold hardiness.

Gleditsia japonica var. koraiensis (Nakai)Nakai - A potential shade tree for highly stressful urban sites.

Ilex cornuta Lindl. & Paxton - The most northern remaining wild population in Korea at a national monument site at Mahong in moist soil at a seepage in low hills near the coast. Formerly very abundant here, the population is now small and most of the plants have been repeatedly cut. There are two expressions here, both seen later in gardens from wild source: (1) a male clone with only a terminal spine, var. fortunei, and (2) the typical spinose var. cornuta. All wild plants were sterile here, but large quantities of seed were collected from plants in gardens verified as being from local sites.

Ilex crenata Thunb. - The most northern remaining wild population in Korea at a national monument site in the interior mountains at Chunggye-ri on an exposed hillside at 140 m altitude. All wild plants were small-leaved, spreading, of congested growth; all were sterile. Seed was collected from cultivated plants previously dug from this site. Villagers reported that this species still grows wild in other remote mountain sites on the peninsula but we were not able to visit those sites.

Ilex macropoda Miq.- This deciduous arborescent species is found throughout the west coast. We collected it on wooded hillsides at Yuyu Dong in the interior of the peninsula. It is scarcely known in cultivation.

Machilus thunbergii Sieb. & Zucc. - Extensive seed collections of this beautiful broad-leaved evergreen tree were made at the national monument site at Chae Sok Kang, Sannae Myon, at the tip of the peninsula. This is the most northern site remaining of populations which once extended north on offshore islands to the North Korean border. Most wild trees have been destroyed by people who strip the bark, dry it and sell it as a medicinal. These trees were growing on rocks overhanging the ocean.

Meliosma oldhamii Max. - This very beautiful shade tree is scarcely known in cultivation. It is distinguished by masses of fragrant white flowers in summer, handsome leathery pinnately compound leaves which turn yellow in autumn contrasting with the large terminal panicles of bright red fruit.

Pyrus calleryana var. fauriei (Schneid.) Rehder - A tough, handsome shrub with beautiful glossy foliage and white flowers in spring. It thrives in very poor soil on very difficult sites.

Vaccinium oldhamii Miq. - A handsome deciduous shrub with vivid red fall color, black fruit.

Viburnum dilatatum Thunb., V. erosum Thunb., V. sargentii Koehne- These and other Viburnum species are valuable subjects for breeding and evaluation to produce exceptional landscape plants. V. erosum was encountered mostly on dry rocky hillsides, V. dilatatum in richer mesic sites, and V. sargentii in marshy areas at the edge of woods, sometimes standing in running water. The stand of V. sargentii in Yuyu Dong was by far the most extensive seen on the west coast of Korea.

Zanthoxylum piperitum A.P.DC., Z. schinifolium Sieb. & Zucc.- These beautiful aromatic shrubs thrive on very difficult sites and should be used more in the landscape. They are valued for medicinal and culinary purposes.

Zelkova serrata Makino - A fine specimen of this valuable shade tree was found growing on a highly stressful site at seaside at Unho-ri, Chinso Myon.

2. Naejang Mountain (ca. 35_28' N, 126_51' E)

This immense mountain massif, not far from the Yellow Sea coast, was originally protected by the proximity of Naejang Temple. It is now a spectacular national park with complexes of peaks and ridges, steep escarpments, ravines and deep valleys abounding in lush vegetation. Limestone outcroppings near the summit support interesting plant communities including such unusual taxa as Rhododendron mucronulatum var. ciliatum Nakai. This park displays the richest, best-protected forest remaining on the west coast of Korea. A primary collecting target was the most northern high-altitude population of the broad-leaved evergreen tree Daphniphyllum macropodum Miq., which grows here in profusion in the deciduous oak-dominated forest up to about 500 m altitude. Seeds from many impressive individuals were collected.

Of special interest here were populations of old specimens of Ilex macropoda Miq. It is likely that the largest specimens in Korea, and perhaps all of Asia, grow here; some more than 15 m tall with as much spread. Thanks to the courage of our Korean assistants, who doubled as aerialists, we were successful in collecting seed and specimens. The taxonomy of this species requires study and evaluation, as does its value as a hardy, highly ornamental tree with smooth silvery bark, handsome foliage and bright red fruit. The herbaceous flora here is impressively rich including at least three species of Lycoris, the Korean endemic Tricyrtis dilata Nakai, fascinating orchids and several species of Arisaema.

The temple grounds are famous for their groves of ancient Torreya nucifera Sieb. & Zucc. bearing heavy fruit. The seeds are gathered, cleaned, dried and sold on the grounds as an insecticide.

Selected Collections

Acer buergerianum Miq. - A superior cultivated specimen in the maple allee leading to the temple.

Alangium platanifolium var. macrophyllum (Sieb. & Zucc.)Wanger. - A hardy member of a rare genus of deciduous shrubs with large handsome maple-like leaves, pretty white flowers and metallic blue fruits. It grows well in dense shade.

Cornus controversa Hemsl.-Seed collections from exceptionally vigorous specimens of this beautiful flowering shade tree.

Cornus kousa Buerg. - Documented collections of this valuable flowering tree.

Daphniphyllum macropodum Miq.- Large seed collections of what should be a hardier race of this beautiful broad-leaved evergreen shrub or small tree.

Idesia polycarpa Max. - This valuable shade tree with its brilliant red fruit is of varying hardiness in cultivation. This collection, from its northern limit in Korea should be reliably hardy in the northeastern United States. The parent trees with beautiful silvery trunks, fluted and buttressed at the base, were growing on steep, treacherous, unconsolidated talus slopes where they had attained great size.

Ilex macropoda Miq. - Impressively large, vase-shaped, multi-trunked trees to 15 m tall and as broad; one of the largest deciduous hollies, scarcely known in cultivation. After field observation it seems evident that f. pseudomacropoda has no taxonomic integrity as both f. macropoda ard f. pseudomacropoda, which are said to differ only in leaf indumentum, grow together in contiguous populations.

Lindera erythrocarpa Makino - This beautiful small tree with tiered branches, yellow fall color and brilliant red fruits is rare in cultivation.

Lindera glauca Bl. - This handsome shrub has gray-green leaves which are glaucous beneath, with flaming fall color and black fruit.

Lindera sericea (Sieb. & Zucc.)Bl. - This is similar to the preceding species but with larger silky leaves. It is very rare and was seen only at this site.

Lindera obtusiloba Bl. - An elegant shrub with yellow flowers in spring, large handsome lobed leaves, excellent yellow fall color and large black fruit.

Orixa japonica Thunb.- A deciduous shrub in the Rutaceae; rare in cultivation.

Rhamnella franguloides (Max.)Weberb. - An elegant shrub with pendant branches, handsome glossy foliage and beautiful fruit which changes from yellow to orange to black.

Rhododendron mucronulatum var. ciliatum Nakai - An ecotype with ciliate leaf margins growing on dry limestone ridges.

Sapium japonicum Pax & Hoffm. - Large shrub or small tree with smooth gray bark, large leathery leaves with flaming autumn color and curious three-lobed fruits. It grows well in highly stressful conditions; shows promise as a useful plant for urban sites.

Torreya nucifera Sieb. & Zucc. - Large conifers growing in an impressive remnant forest preserved as a national monument; some trees said to be at least 750 years old.

Viburnum dilatatum Thunb. x V. erosum Thunb. - Apparent natural hybrids of two beautiful Viburnum species.

3. Mokpo: Yudal Mountain and Vicinity

(ca. 34_46' N, 126_23' E)

Mokpo is a picturesque, bustling, noisy major fishing port which serves as the southwest's gateway to the many offshore islands in the Yellow Sea. The city is dominated by Yudal Mountain which rises abruptly to about 200 m altitude, offering panoramic views of the city and small islands aear the coast. This mountain is the only place in the world where Albizia coreana Nakai grows in the wild. This distinctive small tree has an attractive vase-shaped habit, large leaflets and showy pure-white flowers. The vegetation of Yudal Mountain is supposed to be protected but unfortunately, is very disturbed. Most of the original vegetation is gone and many exotic species have been planted. Introduced plantings of Albizia julibrissin Durazz. have interbred with A. coreana making it very difficult to find genetically uncontaminated plants of the latter species. It seems certain the A. coreana will soon be extinct in the wild. As this handsome tree is virtually unknown in cultivation, there is a special urgency to establish genetically pure populations in cultivation outside Korea.

4. The Huksan Island Group

(ca. 34_ to 35_ N, 125_ to 126_ E)

This segment of the expedition was the most difficult and most intriguing. The islands lie southwest off the tip of the Korean mainland; several of them are in name a national park but, in contrast to Naejang Mountain, there is little apparent effective control. Taehuksan, a collecting site closer to the coast, was the point of departure for Sohuksan, the Korean island furthest off the southwest coast. In the course of our boat travel, we were able to survey many of the other islands with binoculars from the boat; most of these presented a barren face to visitors, trees long since cut, the sparse remaining vegetation abandoned to goats.

4A. Taehuksan Island (ca. 34_40' N, 125_25' E)

This is the largest island of the Huksan Group and has a highly variable topography. Frorn the remnants of the original native flora which have survived extraordinary human abuse, it is clear that the island once supported a very rich flora. At one of the port villages, Chin-ri, a grove of trees remains around a family shrine. There we noted what might be the largest specimen in the world of Michelia compressa (Max.)Sarg ., ca. 20 m tall, dbh nearly 1 m, circa 300 years old. Seaside populations of Hosta growing in full sun were of interest and, away from the coast, communities of the fern Gleichenia japonica Spreng. with enormous fronds, silver beneath, seemed well-suited as a tall ground cover. Ilex x wandoensis C.F.Miller ex T.R.Dudley in ed., a natural hybrid of Ilex cornuta Lindl. & Pax. and Ilex integra Thunb., was first recognized by Mr. C. Ferris Miller, founder of Chollipo Arboretum, as a potted plant dug from the wild on the Korean island of Wando. In the village of Yeri, we encountered a potted plant of this hybrid which we were told was dug in the wild on Taehuksan. However, we were not able to find the hybrid in the wild, although we did find plants of one of the putative parents, Ilex integra, growing as coppiced plants in a seaside thicket. It is reasonable to assume that Ilex cornuta was also native here and that I. x wandoensis was or is still indigenous.

Selected Collections

Caryopteris incana (Thunb.)Miq. - A beautiful summer-flowering shrub with showy flowers in various shades of blue was collected on rocky bluffs.

Dianthus sinensis L. - An herbaceous perennial with white or pink flowers. Used as one of the breeding parents for the florists' carnations.

Elaeagnus glabra Thunb. - Semi-scandent evergreen shrub with coppery stems and leaves, silvery to coppery beneath.

Hosta aff. minor Nakai - Seaside populations growing on rocks in full sun and exposed to salt spray.

Ligustrum japonicum Thunb. - Extensive populations of this useful evergreen shrub with small leaves, short internodes and compact growth habit; cuttings from many plants.

Quercus acuta Thunb. - Stately broad-leaved evergreen shade tree, possibly with residual cold-hardiness here.

Rhaphiolepis umbellata Thunb.(Makino) - Broad-leaved evergreen shrub of exposed coastal sites, possibly with residual genetic hardiness necessary to broaden cultivation range.

Rhododendron mucronulalum var. maritimum Nakai - Seaside ecotype with thick cuticle, resistant to salt and wind; possibly well-adapted to highly stressful urban sites.

Sorbus alnifolia (Sieb. & Zucc.)C.Koch - Unusual creeping shrubby ecotype of this valuable landscape tree.

Styrax japonica Sieb. & Zucc. - Seaside ecotype of this small flowering tree with wind and salt resistant foliage; possibly well-adapted to highly stressful urban sites.

Vaccinium bracteatum Thunb. - Graceful broad-leaved evergreen shrub with glossy foliage; here hosting the rare parasitic shrub Pseudixus japonicus Hayata attached to its branches.

Viburnum carlesii Hemsl. - A seaside shrub with showy fragrant flowers in spring.

Zanthoxylum planispinum Sieb. & Zucc. - An aromatic semi-evergreen shrub with red fruits; good plant for barrier hedges.

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1985 U. S. National Arboretum Plant Exploration in the Republic of Korea,

Southwest Coast and Islands

Final Report: Part II

T. R. Dudley and B. R. Yinger

4B. Sohuksan Island (34_05' N, 125_06' E)

Lying far off the Korean coast in the Yellow Sea, Sohuksan Island is the most remote of all the southwest Korean islands. To reach the island, one must take an all-day ferry to Taehuksan, then take another ferry the following day, transferring to a small fishing boat for the final approach to the island. Although Sohuksan is a small island, about 6 km long and 3 km wide, it is the site of the highest peak in southwestern Korea, Tokshil Mountain, nearly 800 m high. There is no record of anyone of any nationality ever having visited this island to examine its flora. No published information about the island was available, so our visit was purely speculative and we were richly rewarded. Without question, Sohuksan was the botanical diamond of the 1985 Korean Expedition. Unfortunately, with three growing villages, one of these under development as a fishing port, deforestation is occurring at such a rapid rate that in a few years there will be little of interest left except perhaps at the highest elevations. The local population cannot perceive any problems forthcoming from deforestation, an attitude which pointedly demonstrates the urgency of plant exploration and rescue before wild populations are decimated.

Our first trip to Sohuksan was slower than anticipated because of a typhoon. Arriving in very bad seas, landing at Sohuksan was extremely difficult and dangerous. Most of our subsequent collecting was done in the rain. We were unable to conduct a thorough botanical survey nor adequately document the vegetation of the entire island. The very wet 1985 autumn considerably delayed fruit ripening.

Sohuksan Island as seen from the water is a forbidding place with its sheer gray cliffs rising almost vertically 80 m. The effect was heightened by our arrival during a typhoon with its driving rain in an open wooden fishing skiff about 5 m long. We put in at one of the three small villages which by good fortune was a most interesting site for collecting. This village, Taepung-ri, is comprised of about fifteen fishermen's houses, one of which became our lodging and base of operations. We encountered an extraordinary landscape of misty peaks and steep hillsides with tumbled boulders as large as houses and covered by what in many places appeared to be virgin warm-temperate forest.

Many Korean tree species grow here to their largest size in Korea; a list of the unbelievably large specimens would fill several pages.

We were particularly impressed by the hollies. Some individual trees of Ilex integra Thunb. were seen with trunks 1.5 to 2 m in diameter at their bases. Unfortunately, many of these trees were being destroyed by villagers who were stripping the bark from the trees to make birdlime, a substance to snare birds and small mammals. Active girdling of all species was underway to open the forest for temporary coppice cultivation of Machilus thunbergii Sieb. & Zucc. which is valued for its medicinal bark, an important cash crop in the island. It was clear from viewing the areas near the villages that the next step after coppicing Machilus will be a highly degraded weedy scrub and grassland suitable only for grazing cattle and, finally, goats.

Rigorous treks to the summit of Tokshil Mountain revealed that part of the mountain, up to about 500 m, had been clear-cut about 30 years ago to make charcoal for export. However, this area had been allowed to regenerate to something resembling the original forest. The area near the summit was nearly undisturbed. Its rocky ledges were covered by dense thickets of Buxus microphyllus var. insularis Nakai and Rhododendron dauricum L. rising above a mixed forest dominated by the evergreen oak Quercus acuta Thunb. The flowering tree Styrax japonica Sieb. & Zucc., which we knew only as a diminutive understory tree, grows here to imposing size with massive, fluted buttressed trunk and its crown forming part of the mature canopy. In rocky places, extensive thickets of the broad-leaved evergreen shrub or tree Daphniphyllum teijsmannii Zoll. filled the gaps between boulders.

In a narrow altitudinal zone in the foothills of Tokshil Mountain, an amazing evergreen Viburnum was discovered. This is Viburnum boninsimense (Makino)Koidz. ex Nakai, formerly known only from the Bonin Islands off the southeast coast of Japan, more than 1,000 miles away. Near the summit of Tokshil Mountain is a species of Asarum clearly different from the two species now described from Korea, evidently a new species.

We were awe-struck by the unique natural resources, the botanical richness and the horticultural promise of Sohuksan. Unfortunately, the villagers seem determined to destroy these features as rapidly as possible. In the few weeks intervening between our initial reconnaissance and later seed collecting visits, several ancient hollies were stripped of their bark and cutting of the forest was clearly accelerating. Giant trees of Ilex, Castanopsis, Quercus, Prunus, Styrax, Camellia, Dendropanax, Cornus, Actinodaphne, Neolitsea, Daphniphyllum, etc., and the indigenous populations of Machilus are being rapidly destroyed. This is great tragedy for Korea and for science.

It is critical that Sohuksan be re-explored as soon as possible, throughout all seasons, to document with germplasm and herbarium vouchers the unique and apparently doomed flora of this unusual island. Despite injury, foul weather, poisonous snakes and land leeches, we would return to Sohuksan with enthusiasm.

Selected Collections

Buxus microphylla var. insularis Nakai - A very broad-leaved evergreen shrub with great ornamental potential.

Camellia japonica L. - Forms with extremely large fruit, some as large as tangerines.

Castanopsis cuspidata var. sieboldii Nakai - A potentially valuable evergreen landscape tree with metallic-coppery lower leaf surfaces and edible acorns, most of which were eaten in the field by our local collectors.

Cornus kousa Buerg. - The Sohuksan population of this handsome flowering tree apears to be morphologically distinct with thickened leaves and obvious crenulate-undulate-mucronulate leaf margins, very long peduncles and small fruit.

Daphniphyllum teijsmannii Zoll. - A broad-leaved evergreen large shrub or small tree with bold dark green leaves crowded at the ends of the branches.

Eurya emarginata (Thunb.)Makino - A rare shrub of inaccessible seaside sites, glossy dark green bullate leaves; rarely cultivated.

Ficus sp. - An arborescent, possibly new species allied to Ficus erecta Thunb., on slopes near the ocean.

Ilex integra Thunb. - Ancient massive specimens with basal trunk diameters to 2 m.

Neolitsea sericea (Bl.)Koidz. - A beautiful broad-leaved evergreen potential landscape tree with showy red fruit and glaucous or coppery leaf undersurfaces.

Quercus acuta Thunb. - A stately broad-leaved evergreen tree which is the major component of the undisturbed forest of the slopes of Tokshil Mountain.

Rhododendron dauricum L. - The only population of this evergreen encountered in 1985 was on the summit ridge of Tokshil Mountain.

Stauntonia hexaphylla (Thunb.)Dcne. - Robust, attractive broad-leaved evergreen climber with showy flowers and large purple edible fruit.

Styrax japonica Sieb. & Zucc. - Seed and vegetative material of selected individuals; here the species is part of the mature canopy with gigantic leaves and fluted buttressed trunks.

Viburnum boninsimense (Makino)Koidz. ex Nakai - An exciting discovery never before reported from Korea; previously known from the Bonin Islands of the Pacific coast of Japan, more than 1,000 miles away. Allied to but distinct from V. japonicum (Thunb.)K.Spreng; apparently limited to a narrow mid-altitudinal range.

Zanthoxylum ailanthoides Sieb. & Zucc. - A very fast-growing, flat-topped deciduous tree which is tolerant of very difficult sites.

A number of herbaceous genera were well-represented here, especially Arisaema and ferns. A collection of the rare dwarf Chrysanthemum zawadskii var. alpinum Kitamura was made on Tokshil Mountain.

5. Wando and Vicinity (ca. 34_21' N, 126_41' E)

This large island at the southern tip of Korea, seldom visited by botanists, was a focal point for collecting in 1985 because it is a remote site with a large number of relict species and plant communities. Until recently, the flora of most of the island was in relatively good condition but, since about 1980, most of the remaining interior forest has been removed in favor of monoculture plantations of Cryptomeria and other exotic tree species. About ten years ago, Mr. C. Ferris Miller, a HSA member, discovered on Wando a naturally occurring hybrid of Ilex cornuta Lindl. & Paxton and I. integra Thunb. This new hybrid is to be officially named Ilex x wandoensis C.F.Miller ex T.R.Dudley in ed. and published scientifically pending evaluation of its range and habitat, confirmation and documentation of the presence of the two parent species and investigation of its natural variation. These objectives and more were accomplished on Wando in 1985.

Our satisfaction in completing this work was greatly diminished by our observation that the hillsides, once heavily populated with I. x wandoensis, C.F. Miller ex T.R.Dudley in ed., are now highly disturbed. Most of the species' natural range is on low hills near the coast where most natural plant communities have been destroyed. Koreans dig the plants in the wild and bring them into cultivation for

garden decoration and for bonsai culture. Good specimens are shipped to Seoul where they command high prices as large potted plants for hotel lobbies. Their life in cultivation is usually short. This hybrid and its parents are approaching extinction in the wild and even now are best represented in gardens in the villages on Wando. Fortunately, most of the cultivated plants, having been moved from the wild fairly recently, are verifiable to the original site.

Based on the remnant wild populations extant and the observations of villagers, Ilex integra Thunb. is distributed most heavily on the south end of the island, then up the west coast almost to the north end, apparently absent from the north end and most of the east coast. Wild populations of Ilex cornuta Lindl. & Paxton are extant on both the east and west coasts but not on the southern third of the island. The only extant wild populations of the hybrid Ilex x wandoensis C.F.Miller ex T.R.Dudley in ed. seen were on the west coast, north of the middle of the island. Comments of local people affirm the observation that the hybrid was most plentiful on the northern half of the island and there were no reports of its past existence in the southern one-third of the island. It seems likely that the original zone of interaction between the parent species was rather narrow, crossing the island east-west at about 34_20' N. The zone of interaction was probably broader on the west coast than the east. The enormous phenotypical variation seen in gardens on the northeast and northwest coasts of the island is probably most often the expression of outbreeding of the hybrid with Ilex cornuta Lindl. & Paxton and other hybrid plants, since Ilex integra Thunb. is less common or absent there. Both parent species are apparently most common at seaside, often just above the high tidal line but are absent in the interior. Although the hybrid is said to have been very common among the hills on the north side of the island away from the ocean, there was no indication that either parent is or was there. Observation and secondhand information suggest that the hybrid is better equipped to compete and succeed on inland sites than both its parents.

Despite the generally disturbed condition of the vegetation, we were able to collect in several sites which remain in more or less original condition. Some of these areas, such as the tiny island of Chudo lying in the bay at the city of Wando, were family shrine sites where Shamanistic reverence for trees has superceded practical desires for firewood and construction material. In such sites were found fruiting plants of the extremely rare broad-leaved evergreen climber Gardneria insularis Nakai, good specimens of Ilex integra Thunb., one plant of Ilex rotunda Thunb. and mature trees of the beautiful evergreen Actinodaphne lancifolia (Sieb. & Zucc.)Meiss. with its showy exfoliating bark resembling Platanus. At seaside in Kalmun-ri, we found an extensive mature native population of Koelreuteria paniculata Laxm., not previously reported from this part of Korea.

Selected Collections

Actinodaphne lancifolia (Sieb. & Zucc.)Meiss. - A rare broad-leaved evergreen tree with beautiful exfoliating bark.

Carpinus coreana Nakai - The most impressive groves seen of this seaside Korean endemic; promises to be a good small tree for urban sites because of its resistance to damage from salt, wind and reflected heat.

Cephalotaxus koreana Nakai - A rare conifer with red fruit, found here in highly stressful sites near the ocean.

Celtis biondii var. heterophylla Schneider - A tough, handsome, medium-size tree at seaside.

Cornus kousa Buerg. - A small-fruited expression with very long peduncles.

Dendropanax trifidus (Thunb.)Makino - A large broad-leaved evergreen tree, rare in cultivation, seen here only in a seaside grove at Tangin-ri.

Euonymus japonicus var. macrophyllus Regel - A broad-leaved evergreen seaside shrub with larger, rounder leaves than the type.

Gardneria insularis Nakai - A very rare evergreen liana with showy red fruit.

Ilex macropoda Miq. - Our most southern collection of this deciduous holly.

Ilex cornuta Lindl. & Paxton, I. integra Thunb.,I. rotunda Thunb., and the natural hybrid I. x wandoensis C.F.Miller ex T.R.Dudley in ed. - The last remnants of the native populations were found at scattered, mostly seaside sites all around the perimeter of the island; the hybrid at more inland sites in the hills than its parents. Even more plants were seen in local gardens. The hybrid is extremely polymorphic because of the genetic plasticity of the parents. There are many phenotypic expressions; the most interesting hybrid expression for horticulture was a cultivated tree dug from the wild with small, nearly spineless leaves, a compact habit and abundant fruit ripening in September; both seed and cuttings were taken of this unusual expression.

Koelreuteria paniculata Laxm. - An unrecorded native population, previously known in the wild in Korea from two stations farther north.

Photinia villosa var. longipes Nakai - A small tree which grows well in highly stressful sites; much superior to the species in leaf, habit, and fruiting.

Poncirus trifoliata Rafin. - An extensive, wild mountaintop population; the first wild population seen and collected in Korea.

Quercus acuta Thunb. - Superior trees of local source growing in a schoolyard.

Rhaphiolepis umbellata (Thunb.)Makino - Seaside collections of this tough evergreen shrub.

Rhododendron yedoense var. poukhanense (Lev.) Nakai - Populations growing at seaside.

Rosa wichuriana Crep. - Prostrate shrub at high tide line.

Sophora flavescens Ait. - A little-known, shrubby species growing near the ocean.

Vitex rotundifolia L.fil. - A mat-forming, creeping shrub with silvery aromatic leaves and showy blue flowers producing extensive colonies on sand and shingle at high tide line.

6. Chindo and Vicinity (ca. 34_29' N, 126_16' E)

This is one of the largest islands on the south coast of Korea, located about 50 km west of Wando. Before 1985 when a bridge was opened, Chindo was considered to be a very remote place and little was known of its flora. In ancient times, Chindo was the final refuge of the Korean court from the Mongol invaders. Most of the island is barren now except for pine plantations and coarse grasses; the result of centuries of activity. There are a few pockets of natural vegetation remaining which provided some interesting collecting.

The temple complex of Sanggye in the interior of the island protects an extensive area of forest, most of which was cut about thirty years ago but has been allowed to regenerate under the protection of a very determined young monk who recently singlehandedly stopped the local governmental authorities from constructing a reservoir near the temple to flood most of the preserve. We found Ilex integra Thunb. growing in abundance here and were able to collect seed of the highly ornamental conifer Cephalotaxus koreana Nakai.

At other seaside sites, we collected seed of Pittosporum tobira Ait., an important evergreen ornamental which we hope will prove to be hardier than forms now in cultivation in the United States. At seaside in Somang-ri, we encountered a population of Weigela praecox L.H. Bailey with rich green, heavily textured foliage in perfect condition in autumn on a dry, windy, very exposed site. Its performance suggested great tolerance for the conditions plants must endure in urban planters or median dividers. At other locations on the south coast of Chindo, we encountered our first large populations of Aphananthe aspera Planch., a large shade tree related to Celtis, with excellent form and foliage and edible black fruit. Collections were made of two desirable hornbeams, Carpinus tschonoskii Max. and C. coreana Nakai.

We suspected that Ilex x wandoensis C.F. Miller ex T.R. Dudley in ed. might be native to Chindo, although there is no record of this. We did find one specimen growing in a garden which was said to have been dug locally in the wild but only one parent, I. integra Thunb., was encountered in the wild. Ilex cornuta Lindl. & Paxton, the other parent, was not found in the wild but it is reasonable to assume that it was once native on Chindo and might still be found in parts of the island we did not explore.

Selected Collections

Aphananthe aspera Planch. - A rarely seen but potentially valuable large street tree.

Campsis grandiflora (Thunb.)K.Schum. - Excellent forms of this beautiful flowering vine are in cultivation. It is likely that this was once native along the west coast of Korea as there appears to be great genetic diversity among the cultivated plants seen. No fertile seed was found; loss in the wild may be because of the loss of pollinator species, probably a sunbird (the Asian ecological counterpart of hummingbirds) and collecting for garden use.

Carpinus tschonoskii Max. - An attractive medium-size tree potential as a street tree.

Cinnamomum japonicum Sieb. - An imposing broad-leaved evergreen tree similar to camphor but hardier.

Ilex integra Thunb. - Inland populations at Sanggye Temple, well protected presently.

Ilex x wandoensis C.F.Miller ex T.R. Dudley in ed. - A single staminate specimen in a garden said to have been dug in the wild. A new station for this natural hybrid.

Kadsura japonica Dunal - A broad-leaved evergreen liana with elegant flowers and showy red fruit.

Milletia japonica A. Gray - A deciduous climber with yellowish flowers in late spring, resembling Wisteria but more diminuitive.

Pittosporum tobira Ait. - A valuable shrub in American landscape. Plants from this island may be hardier than what we know in cultivation. All material in cultivation in the United States is probably of Japanese origin.

Quercus salicina Bl. - An elegant evergreen oak with slender leaves, silver beneath.

Torreya nucifera Sieb. & Zucc. - An old specimen, designated a national monument.

Ulmus parvifolia Jacq. - One of the finest and toughest shade trees, growing here at an exposed seaside site.

Vaccinium bracteatum Thunb. - An exceptionally good form of this broad-leaved evergreen shrub with very large showy panicles of red fruit; planted in a schoolyard, originally dug in the wild.

Weigela praecox L.H. Bailey - An exceptionally vigorous population at a highly stressful site at seaside.

Berchemia racemosa var. magna Makino - This Korean endemic seems now to be limited to one small site which is currently being used as a construction dump in the center of Anmyon Island. We collected cuttings of this handsome climber in an effort to establish it in cultivation before it becomes extinct.

NCSU Arboretum (now the JC Raulston Arboretum) - NEW PLANTS RECEIVED JUNE - DECEMBER 1987

87-0188 Nerine 'Aachen' - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0189 Nerine 'Bennett Poe' - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0190 Nerine 'Blenheim' - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0191 Nerine bowdenii - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0192 Nerine 'Carmenita' - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0193 Nerine 'crispa' - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0194 Nerine 'Desdmona' - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0195 Nerine 'Diana Ollium' - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0196 Nerine 'Gaby Deslys' - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0197 Nerine 'Gusadu' - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0198 Nerine 'Horsa' - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0199 Nerine 'Lady Havelock Allen' - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0200 Nerine 'Lord Granell' - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0201 Nerine 'Miss Moore' - Longwood Gardens - Kennett Square PA - Bulb - 6/18

87-0202 Nerine 'Miss Willmott' - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0203 Nerine 'Mrs. H. J. Elwes' - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0204 Nerine 'Pink Triumph' - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0205 Nerine 'Rodacia' - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0206 Nerine 'Ruth' - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0207 Nerine 'Teona' - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0208 Nerine 'Vicky' - Longwood Gardens - Kennett Square, PA - Bulb - 6/18

87-0209 Serissa foetida 'German Variegate' - Bonsai Centrum - Heidelberg, Germany - 3" pot - 7/7

87-0210 Hydrocotyle sibthorpiodes - James Proctor (plant orig. from Atlanta Botanic Garden) - Pot of divisions - 8/9

87-0211 Acer palmatum 'Sango Kaku' - Duncan & Davies, NZ - 4' grafted liner - 8/l2

87-0212 Acer palmatum 'Suminagashi' - Duncan & Davies, NZ - 6' grafted liner - 8/12

87-0213 Magnolia 'Iolanthe' - Duncan & Davies, NZ - 4' grafted liner - 8/12

87-0214 Hamamelis X intermedia 'Westerstede' - Duncan & Davies, NZ - 3' grafted liner - 8/12

87-0215 Hamamelis X intermedia 'Arnold Promise' - Duncan & Davies, NZ - 3' grafted liner - 8/12

87-0216 Hamamelis X intermedia 'Pallida' - Duncan & Davies, NZ - 3' grafted liner - 8/12

87-0217 Hamamelis X intermedia 'Jelena' - Duncan & Davies, NZ - 3' grafted liner - 8/12

87-0218 Chimonanthus praecox - Duncan & Davies, NZ - 6" rooted cuttings - 8/12

87-0219 Cupressus glabra 'Silver Smoke' - Duncan & Davies, NZ - 5" rooted cuttings - 8/12

87-0220 Cupressus macrocarpa 'Golden Pillar' - Duncan & Davies, NZ - 5" rooted cuttings - 8/12

87-0221 Cupressus macrocarpa 'Horizontalis Aurea' ('Lamertiana Aurea') - Duncan & Davies, NZ - 8" - 8/12

87-0212 Cupressus macrocarpa 'Saligna Aurea' - Duncan & Davies, NZ - 1' grafts - 8/12

87-0213 Fatshedera lizei 'Media Picta' - Glasshouse Works, Stewart, OH - 6" liner - 9/4

87-0214 Fatshedera lizei 'Monstrosa Variegata' - Glasshouse Works, Stewart, OH - 6" liner - 9/4

87-0215 Ophiopogon japonica 'Aritake' - Glasshouse Works, Stewart, OH - Division - 9/4

87-0216 Ophiopogon japonica 'Kyoto Dwarf' - Glasshouse Works, Stewart, OH - Division - 9/4

87-0217 Punica granatum 'Pink Flowered' - Glasshouse Works, Stewart, OH - Division - 9/4

87-0218 Punica granatum 'Variegata' - Glasshouse Works, Stewart, OH - Division - 9/4

87-0219 Crocus sativus 'Cartwrightianus Albus' - John Lyon. Inc., Cambridge, MA - 3 bulbs - 9/8

87-0220 Colchicum autumnale 'Album' - John Lyon, Inc., Cambridge, MA -1 bulb - 9/8

87-0221 Colchicum cilicicum - John Lyon, Inc., Cambridge, MA - 1 bulb - 9/8

87-0222 Colchicum luteum - John Lyon, Inc., Cambridge, MA - 1 bulb - 9/8

87-0223 Erythronium 'White Beauty' - John Lyon, Inc., Cambridge, MA - 1 bulb - 9/23

87-0224 Fritillaria meleagris 'Alba' - John Lyon, Inc., Cambridge, MA - 1 bulb - 9/23

87-0225 Hyacinthus azureus 'Alba' - John Lyon, Inc., Cambridge, MA -12 bulbs - 9/23

87-0226 Ipheion 'Wisley Blue' - John Lyon, Inc., Cambridge, MA - 12 bulbs - 9/23

87-0227 Sternbergia clusiana - John Lyon. Inc., Cambridge, MA - 1 bulb - 9/23

87-0228 Stewartia monodelpha - Nelson Nursery, Mooresville, NC - 5 gal/4' - 9/23

87-0229 Campanula punctata 'Alba' (#850824) - Longwood Gardens, Kennett Square, PA - 4" pot - 9/24

87-0230 Pennisetum 'Burgundy Giant' (#861006) - Longwood Gardens, Kennett Square, PA - 4" pot - 9/24

87-0231 Penstemon campanulatus 'Evelyn' (#861407) - Longwood Gardens, Kennett Square, PA - 4" pot - 9/24

87-0232 Serissa foetida (#850040) - Longwood Gardens, Kennett Square, PA - 4" pot - 9/24

87-0233 Cercis silaquastrum - Lone Star Nursery (seed), San Antonio, TX - Seedings potted - 9/28

87-0234 Cercis canadensis 'Texensis' (C. reniformis) - Lone Star Nursery (seed), San Antonio, TX - Sdl. potted - 9/28

87-0235 Cercis canadensis 'Mexicana' (C. mexicana) - Lone Star Nursery (seed), San Antonio, TX -Sdl. potted - 9/28

87-0236 Sophora arizonica - Lone Star Nursery (seed), San Antonio, TX - Seedlings potted - 9/28

87-0237 Prunus gracilis - Lone Star Nursery (seed), San Antonio, TX - Seedlings potted - 9/28

87-0238 Ziziphyus obtusifolia - Lone star Nursery (seed), San Antonio, TX - Seedlings potted - 9/28

87-0239 Mahonia trifoliata - Lone Star Nursery (seed), San Antonio, TX - Seedlings potted - 9/28

87-0240 Arbutus xalapensis - Lone Star Nursery (seed), San Antonio, TX - Seedlings potted - 9/28

87-0241 Rhus chinensis - Lone Star Nursery (seed), San Antonio, TX - Seedlings potted - 9/28

87-0242 Styrax americana - Lone Star Nursery (seed), San Antonio, TX - Seedlings potted - 9/28

87-0243 Diospyros palmeri - Lone Star Nursery (seed), San Antonio, TX - Seedlings potted - 9/28

87-0244 Cupressus chengiana - Lone Star Nursery (seed), San Antonio, TX - Seedlings potted - 9/28

87-0245 Sophora tomentosa - Lone Star Nursery (seed), San Antonio, TX - Seedlings potted - 9/28

87-0246 Phellodendron chinensis - Hoyt Arboretum (seed), Portland, OR - Seedlings potted - 9/28

87-0247 Genista aethnensis - Hoyt Arboretum (seed), Portland, OR - Seedlings potted - 9/28

87-0248 Fraxinus ornus - Hoyt Arboretum (seed), Portland, OR - Seedlings potted - 9/28

87-0249 Ostrya carpinifolia - Hoyt Arboretum (seed), Portland, OR - Seedlings potted - 9/28

87-0250 Fraxinus ornus - U. of Washington Arboretum (seed), Seattle, WA - Seedlings potted - 9/28

87-0251 Corylopsis sinensis - U. of Washington Arboretum (seed), Seattle, WA - Seedlings potted - 9/28

87-0252 Baptisis leucantha - ARGS Seed Exchange - Seedlings potted - 9/28

87-0253 Arbutus occidentalis (Mexico) - ARGS Seed Exchange #4946 - Seedlings potted - 9/28

87-0254 Agapanthus campanulatus - Thompson & Morgan Seed Co. - Seedlings potted - 9/28

87-0255 Agapanthus 'Headbourne Hybrids' - Thompson & Morgan Seed Co. - Seedlings potted - 9/28

87-0256 Lycoris albiflora (NA 3757/56684) -1985 Korean Expedition Seed - Seedlings potted - 9/28

87-0257 Lycoris sp. (NA3294/56486) -1985 Korean Expedition Seed - Seedlings potted - 9/28

87-0258 Carex glauca - Siskiyou Rare Plant Nursery, Medford, OR - Division - 9/30

87-0259 Jeffersonia diphylla - Siskiyou Rare Plant Nursery, Medford, OR - Division - 9/30

87-0260 Jeffersonia dubia - Siskiyou Rare Plant Nursery, Medford, OR - Divsion - 9/30

87-0261 Poneorchis graminifolia - Siskiyou Rare Plant Nursery, Medford, OR - Division - 9/30

87-0262 Calanthe discolor - Siskiyou Rare Plant Nursery, Medford, OR - Division - 9/30

87-0263 Pleione bulbocodioides 'Blush of Dawn' - Siskiyou Rare Plant Nursery, Medford, Or - Division - 9/30

87-0264 Pleione praecox - Siskiyou Rare Plant Nursery, Medford, OR - Division - 9/30

87-0265 Salix serpyllifolia - Siskiyou Rare Plant Nursery, Medford, OR - Division - 9/30

87-0266 Roscoea alpina - Siskiyou Rare Plant Nursery, Medford, OR - Division - 9/30

87-0267 Franklinia alatamaha - Mountain View Nursery, Clyde, NC - 3 gal/5' -10/03

87-0268 Shortia glacifolia - Rhododendron Farm, Mt. Home, NC -1 gal -10/04

87-0269 Acer palmatum " - Flora Knoll Farm Hendersonville, NC - I gal/2' -10/04

87-0270 Cornus florida 'Pluribracteata' - Flora Knoll Farm, Hendersonville, NC -1 gal/2' -10/04

87-0271 Narcissus 'Ascot' - Park Seed Co., Greenwood, SC - Bulbs -10/06

87-0272 Narcissus 'Coral Strand' - Park Seed Co., Greenwood. SC - Bulbs -10/06

87-0273 Narcissus 'Early Sensation' - Park Seed Co., Greenwood, SC - Bulbs -10/06

87-0274 Narcissus 'Early Splendor' - Park Seed Co., Greenwood, SC - Bulbs -10/06

87-0275 Narcissus 'Fortissimo' - Park Seed Co., Greenwood, SC - Bulbs -10/06

87-0276 Narcissus 'Filly' - Park Seed Co., Greenwood, SC - Bulbs - 10/06

87-0277 Narcissus 'Ice Cream' - Park Seed Co., Greenwood, SC - Bulbs - 10/06

87-0278 Narcissus 'Interim' - Park Seed Co., Greenwood, SC - 8ulbs -10/06

87-0279 Narcissus 'Manon Lescaut' - Park Seed Co., Greenwood, SC - Bulbs -10/06

87-0280 Narcissus 'Majesty' - Park Seed Co., Greenwood, SC - Bulbs -10/06

87-0281 Narcissus 'Pink Charm' - Park Seed Co., Greenwood, SC - Bulbs -10/06

87-0282 Narcissus 'Rosy Cloud' - Park Seed Co., Greenwood, SC - Bulbs -10/06

87-0283 Narcissus 'Suade' - Park Seed Co., Greenwood, SC - Bulbs -10/06

87-0284 Narcissus 'St. Patrick's Day' - Park Seed Co., Greenwood, SC - Bulbs -10/06

87-0285 Narcissus 'Topolino' - Park Seed Co., Greenwood, SC - Bulbs -10/06

87-0286 Narcissus 'World's Favorite' - Park Seed Co., Greenwood, SC - Bulbs -10/06

87-0287 Buddlea davidii 'Harlequin' - Tromphenburg Arboretum, Rotterdam, Holland - Cuttings potted - 10/08

87-0288 Sedum album 'Murale' - Chicago Botanic Garden. Glencoe, IL - Divisions -10/11

87-0289 Narcissus 'Lark' - R. D. Havens (Mitsch Daffodils), Hubbard, OR - Bulb -10/12

87-0290 Narcissus 'Lilac Delight' - R. D. Havens (Mitsch Daffodils), Hubbard, OR - Bulb -10/12

87-0291 Narcissus 'Moonflight' - R. D. Havens (Mitsch Daffodils), Hubbard, OR - Bulb -10/12

87-0292 Narcissus 'Nazareth' - R. D. Havens (Mitsch Daffodils), Hubbard, OR - Bulb -10/12

87-0293 Narcissus 'Pastel Gem' - R. D. Havens (Mitsch Daffodils), Hubbard, OR - Bulb -10/12

87-0294 Narcissus 'Resplendent' - R. D. Havens (Mitsch Daffodils), Hubbard, OR - Bulb -10/12

87-0295 Narcissus 'Snow Gem' - R D Havens (Mitsch Daffodils), Hubbard, OR - Bulb -10/12

87-0296 Narcissus 'Step Forward' - R. D. Havens (Mitsch Daffodils), Hubbard, OR - Bulb -10/12

87-0297 Narcissus 'Stint' - R. D. Havens (Mitsch Daffodils), Hubbard. OR - Bulb -10/12

87-0298 Narcissus 'Geranium' - (Pi Alpha Xi - Commercial) - 50 Bulbs - 10/15

87-0299 Narcissus 'Fortune' - (Pi Alpha Xi - Commercial) - 40 Bulbs -10/15

87-0300 Narcissus 'Mt. Hood' - (Pi Alpha Xi - Commercial) - 20 Bulbs - 10/15

87-0301 Narcissus 'Unsurpassable' - (Pi Alpha Xi - Commercial) - 50 Bulbs - 10/15

87-0302 Narcissus 'February Gold' - (Pi Alpha Xi - Commercial) - 40 Bulbs - 10-15

87-0303 Narcissus 'Tete A Tete' - (Pi Alpha Xi - Commercial) - 50 Bulbs -10/15

87-0304 Narcissus 'Thalia' - (Pi Alpha Xi - Commercial) - 50 Bulbs -10/15

87-0305 Narcissus 'Cheerfulness' - (Pi Alpha Xi - Commercial) - 75 Bulbs -10/15

87-0306 Crocus 'Blue Bird' - (Pi Alpha Xi - Commercial) -10 Bulbs -10/15

87-0307 Crocus 'Yellow Bird' - (Pi Alpha Xi - Commercial) -15 Bulbs -10/15

87-0308 Crocus 'Lady Killer' - (Pi Alpha Xi - Commercial) - 15 Bulbs -10/15

87-0309 Crocus 'Snowbunting' - (Pi Alpha Xi - Commercial) -10 Bulbs -10/15

87-0310 Muscari armeniacum 'Alba' - (Pi Alpha Xi - Commercial) - 25 Bulbs -10/15

87-0311 Scilla campanulata (Mixed) - (Pi Alpha Xi - Commercial) - 50 Bulbs -10/15

87-0312 Eranthis hyemalis - (Pi Alpha Xi - Commercial) - 25 Bulbs -10/15

87-0313 Scilla siberica - (Pi Alpha Xi - Commercial) - 70 Bulbs -10/15

87-0314 Galanthus nivalis - (Pi Alpha Xi - Commercial) -100 Bulbs -10/15

87-0315 Tulip 'Orange Emperor' (Fosteriana) - (Pi Alpha Xi - Commercial) - 20 Bulbs -10/15

87-0316 Tulip 'Red Riding Hood' (Greigii) - (Pi Alpha Xi - Commercial) -10 Bulbs -10/15

87-0317 Tulip 'Golden Oxford' (Darwin) - (Pi Alpha Xi - Commercial) -120 Bulbs -10/15

B7-0318 Tulip 'Golden Apeldoorn' (Darwin) - (Pi Alpha Xi - Commercial) - 25 Bulbs -10/15

87-0319 Tulip 'Johann Strauss' (Kaufmanniana) - (Pi Alpha Xi - Commercial) - 30 Bulbs -10/15

87-0320 Tulip 'Sorbet' (Darwin) - (Pi Alpha Xi - Commercial) -10 Bulbs -10/15

87-0321 Tulip 'Oxford' (Darwin) - (Pi Alpha Xi - Commercial) -180 Bulbs -10/15

87-0322 Tulip 'Gordon Cooper' (Darwin) - (Pi Alpha Xi - Commercial) - 40 Bulbs -10/15

87-0323 Tulip 'Jewel of Spring' (Darwin) - (Pi Alpha Xi - Commercial) - 5 Bulbs -10/15

87-0324 Tulip 'Dasystemon Tarda' (Botanical) - (Pi Alpha Xi - Commercial) - 5 Bulbs -10/15

87-0325 Betula albosinensis var. septentrionalis - Gossler Nursery - 1 gallon - 10/17

87-0326 Fothergilla gardenii 'Platt Garden Form' - Gossler Nursery - 1 gallon - 10/17

87-0827 Hamamelis vernalis 'Carnea' - Gossler Nursery -1 gallon -10/17

87-0328 Hamamelis vernalis 'Christmas Cheer' - Gossler Nursery - 1 gallon - 10/17

87-0329 Michelia figo 'Stubb's Purple' - Gossler Nursery - 1 gallon -10/17

87-0330 Stewartia malacodendron - Gossler Nursery - 1 gallon -10/17

87-0331 Sycopsis tutcheri - Gossler Nursery -1 gallon -10/17

87-0332 Franklinia alatahama - Univ. of GA Botanical Garden, Athens, GA - 1 Gallon -10/25

87-0333 Hypericum olympicum - Univ. of GA Botanical Garden, Athens, GA - Quart -10/25

87-0334 Hypericum frondosum - Univ. of GA Botanical Garden, Athens, GA - Quart -10/25

87-0335 Hypericum densiflorum - Univ of GA Botanical Garden, Athens, GA - Quart - 10/25

87-0336 Camellia 'Mona Johnstone' - Univ. of GA Botanical Garden, Athens, GA - Quart -10/25

87-0337 Chrysanthemum pacificum - Univ. of GA Botanical Garden, Athens, GA - Quart - 10/25

87-0338 Cotoneaster thymifolia - Taylor's Nursery, Raleigh, NC -1 Gallon -10/28

87-0339 Allium zaailing (elatum X christophii) - DeHertogh (from Dutch New Cultivar Trials) - 15 Bulbs - 11/04

87-0340 Magnolia acuminata 'Koban-dori' - Otto Eisenhut, San Nazzaro/Ticino, Switzerland - Liner - 12/08

87-0341 Magnolia dawsoniana 'Clark's Var.' - Otto Eisenhut, San Nazzaro/Ticino, Switzerland - Liner - 12/08

87-0342 Magnolia dawsoniana 'Strybing' - Otto Eisenhut, San Nazzaro/Ticino, Switzerland - Liner - 12/08

87-0343 Magnolia denudata 'Forrest's Pink' - Otto Eisenhut, San Nazzaro/Ticino, Switzerland - Liner - 12/08

87-0344 Magnolia stellata 'Chrysanthemumiflora' - Otto Eisenhut, San Nazzaro/Ticino, Switzerland - Liner - 12/08

87-0845 Magnolia X 'Elisa Odenwald' - Otto Eisenhut, San Nazzaro/Ticino, Switzerland - Liner - 12/08

87-0346 Magnolia X 'Joe C. McDaniel' - Otto Eisenhut, San Nazzaro/Ticino, Switzerland - Liner -12/08

87-0347 Magnolia X 'Manchu Fan' - Otto Eisenhut, San Nazzaro/Ticino, Switzerland - Liner -12/08

87-0348 Magnolia X 'Sayonara' - Otto Eisenhut, San Nazzaro/Ticino, Switzerland - Liner -12/08

87-0349 Magnolia X 'Iolanthe' - Otto Eisenhut, San Nazzaro/Ticino, Switzerland - Liner - 12/08

87-0350 Magnolia X 'Opal' - Otto Eisenhut, San Nazzaro/Ticino, Switzerland - Liner -12/08

87-0351 Magnolia X 'Stardust' - Otto Eisenhut, San Nazzaro/Ticino, Switzerland - Liner -12/08

87-0352 Magnolia X 'Sundew' - Otto Eisenhut, San Nazzaro/Ticino, Switzerland - Liner -12/08

87-0353 Magnolia X 'Star Wars' - Otto Eisenhut, San Nazzaro/Ticino, Switzerland - Liner -12/08

87-0354 Viburnum X burkwoodii selection (NA 57259) - National Arboretum, DC -1' liners (5) -12/09

87-0355 Narcissus 'Jules Verne' - Local commercial, Raleigh - bulbs - 12/24

87-0356 Buddlea lindleyana - N.C. Farmyard - Cuttings potted -12/26

87-0357 Rhododendron 'Canary' - Beeson Rhododendron Nursery, Randleman. NC - 3 gal -12/28

87-0358 Buxus sempervirens 'Elegantissima' - Gilbert's Nursery, Chesnee, SC - 2 gal -12/28

87-0359 Nandina domestica 'Gulfstream' - Piedmont/Carolina Nursery, Colfax, NC - 2 gal - 12/28

87-0360 Koelreuteria bipinnata - Va. Truck Orn. Res. Stat., Va. Beach, VA -15" liners -12/28

87-0361 Astilbe 'Deutschland' - J. C. Taylor, Raleigh, NC - gallon - 12/28

87-0362 Astilbe 'Spinel' - J. C. Taylor, Raleigh, NC - gallon -12/28

87-0363 Astilbe 'Federsee' - J. C. Taylor, Raleigh, NC - gallon - 12/28

87-0364 Astilbe 'Glow' - J. C. Taylor, Raleigh, NC - gallon -12/28

87-0365 Astilbe 'Gertrude Brix' - J. C. Taylor, Raleigh, NC - gallon -12/28

87-0366 Astilbe 'Gloria' - J. C. Taylor, Raleigh, NC - gallon -12/28

87-0367 Astilbe 'Fanal' - J. C. Taylor, Raleigh, NC - gallon -12/28

87-0368 Astilbe 'Diamond' - J. C. Taylor, Raleigh, NC - gallon -12/28

87-0369 Astilbe 'Rheinland' - J. C. Taylor, Raleigh, NC - gallon - 12/28

87-0370 Astilbe 'Koblenz' - J. C. Taylor, Raleigh, NC - gallon -12/28

87-0371 Astilbe 'Peach Blossom' - J. C. Taylor, Raleigh, NC - gallon -12/28

87-0372 Astilbe 'Cattleya' - J. C. Taylor, Raleigh, NC - gallon -12/28

87-0373 Astilbe 'Erika' - J. C. Taylor, Raleigh, NC - gallon -12/28

87-0374 Astilbe 'Europa' - J. C. Taylor, Raleigh, NC - gallon - 12/28

87-0375 Astilbe 'Breman' - J. C. Taylor, Raleigh, NC - gallon - 12/28

87-0376 Astilbe 'Gladstone' - J. C. Taylor, Raleigh, NC - gallon - 12/28

87-0377 Astilbe 'Etna' - J. C. Taylor, Raleigh, NC - gallon -12/28

87-0378 Astilbe 'Finale' - J. C. Taylor - Raleigh, NC - gallon - 12/28

87-0379 Astilbe 'Bridal Veil' - J. C. Taylor, Raleigh, NC, - gallon -12/28

87-0380 Astilbe pumila - J. C. Taylor, Raleigh, NC - gallon -12/28

87-0381 Astilbe chinensis 'Serenade' - J. C. Taylor, Raleigh, NC - gallon -12/28

87-0382 Koeleria glauca - Hines Nursery - gallon -12/28

87-0383 Solaginella pulessens - Hines Nursery - gallon -12/28

87-0384 Nandina domestica 'Gulf Stream' - Hines Nursery - gallon -12/28

87-0385 Buddleia X 'Lochinch' - Holbrook Nursery, Fletcher, NC - gallon -12/29

87-0386 Clematis heracleifolia 'Davidiana' - Andre Viette Nursery, VA - qt. -12/29

87-0387 Clematis heracleifolia 'Robert Brydon' - Andre Viette Nursery, VA - qt. - 12/29

87-0388 Delphinium chinensis 'Blue Elf' - Andre Viette Nursery, VA - qt. - 12/29

87-0389 Dictamnus albus - Andre Viette Nursery, VA - qt. -12/29

87-039O Monarda 'Beauty of Cobham' - Andre Viette Nursery, VA - qt. - 12/29

87-0391 Monarda 'Kardinal' - Andre Viette Nursery, VA - qt. - 12/29

87-0392 Phlox paniculata 'Russian Rapsody' - Andre Viette Nursery, VA - qt. - 12/29

87-0393 Crinum X powellii 'Rosea' - Andre Viette Nursery, VA - qt - 12/29

87-0394 Acorus gramineus 'Variegata' - Andre Viette Nursery, VA - qt. -12/29

87-0395 Anthemis tinctoria 'Pale Yellow Form' - Montrose Nursery, Hillsborough, NC - qt. -12/30

87-0396 Anthemis tinctoria 'White Form' - Montrose Nursery, Hillsborough, NC - qt. -12/30

87-0397 Thermopsis luponides - Montrose Nursery, Hillsborough, NC - qt. -12/30

87-0398 Phlox pilosa - Montrose Nursery, Hillsborough, NC - qt. - 12/30

87-0399 Aster sp. - Montrose Nursery, Hillsborough, NC - qt. -12/30

87-0400 Nirenbergia scoparia 'Albiflora' - Montrose Nursery, Hillsborough, NC - qt. -12/30

87-0401 Geranium pratense - Montrose Nursery, Hillsborough, NC -12/30

The following plants were donated to Edith Eddleman for the perennial border by Mr. Richard Dufresne of Greensboro, NC.

87-0402 Agastache barberi X mexicana

87-0403 Agastache coccinea

87-0404 Agastache coccinea X mexicana

87-0405 Stachys coccinea

87-0406 Malvastrum hypomandenum

87-0407 Salvia greggii X grahamii 'Marschino'

87-0408 Salvia greggii - erect hybrid

87-0409 Salvia greggii 'Furman's Red'

87-0410 Salvia gregii 'Rosea'

87-0411 Salvia greggii X lemmonii 'Plum Wine'

87-0412 Perovskia abrotanoides

87-0413 Impatiens repens

87-0414 Penstemon murryanies

87-0415 Salvia greggi 'Raspberry Royale'

87-0416 Salvia madrensis

87-0417 Salvia leucantha (all purple form)

87-0418 Leonotis nepetaefolia

87-0419 Salvia species from Frank Cabot (chocolate and coral)

87-0420 Salvia miniata87-0421 Salvia involucrata M. flores Hidalgo

87-0422 Salvia X 'Purple Majesty'

87-0423 Salvia nilotica

87-0424 Salvia discolor

87-0425 Salvia muelleri (TP)

87-0426 Salvia microphylla Hidalgo - Red deltoid leaved

87-0427 Salvia mexicana Hidalgo Red

87-0428 Salvia guananitica Costa Rica

87-0429 Salvia oppositiflora

87-0430 Salvia mexicana minor TR RFD 86

87-0431 Salvia bleph?

87-0432 Salvia forstichlei

87-0433 Ballota acetobulosa

87-0434 Maurandya rubescens

87-0435 Felicia ameloides

87-0436 Coleus ambornicus Variegatus

87-0437 Plectranthus fruiticosus

87-0438 Agastache coccinea X rupestris Firebird

87-0439 Agastache aurantiaca