

JC Raulston Arboretum

Friends of the Arboretum Newsletter

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J. C. Raulston

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COMING EVENTS:

OCTOBER 26 (WEDNESDAY) - ANNUAL PLANT DISTRIBUTION AND SLIDE SHOW. During the fall I will be giving a series of lectures covering my travels in Europe this spring while on study leave from NCSU. This first slide show will cover Holland, Belgium, France, Spain, and Portugal (covered in the story in this newsletter issue. We will meet in 3712 Bostian Hall, NCSU Campus at 7:30 PM.

*****Following the lecture we will have our annual plant distribution which is such a favorite event with so many members. Although we will have fewer plants than the 5,000 we gave away last year (disposing of the last of the Korean expedition materials then) - we will still have over 2,000 plants available. Last year only about 100 people showed up - "requiring" everyone to go home with an average of 50 exciting and rare plants apiece. Even if double the number show this year - you can still take home a wonderful haul of goodies - some of which are not commercially available anywhere in the country. "Oldtimers" to this event know it pays to bring a cardboard box for accumulation and carrying of plants. Most plants are potted but some will be rooted cuttings in flats and bringing a few small plastic bags will make gathering and transport easier. Also - we cannot label all the plants - and normally put an overall label on each block of plants and provide a stack of labels for you to label your selections. We will provide wooden stakes, but it would help to bring your own marker.

NOVEMBER 17 (THURSDAY) - SLIDE SHOW. Slide show number two of the fall series on the European travels - this time covering Italy, Greece, and Turkey. Meet at 7:30 PM in 159 Kilgore Hall, NCSU Campus.

NOVEMBER 28 (MONDAY) - SLIDE SHOW. Slide show number three of the fall series on the European travels - this time covering Hungary, Yugoslavia, Ireland and Scotland. Meet at 7:30 PM in 159 Kilgore Hall, NCSU Campus.

DECEMBER 7 (WEDNESDAY) - SLIDE SHOW. Slide show number four of the fall series on the European travels - this time covering England - Part One. Meet at 7:30 PM in 159 Kilgore Hall, NCSU Campus.

DECEMBER (GENERIC). This month will finally bring our long-awaited Allen Lacy article on The NCSU Arboretum (now the JC Raulston Arboretum) in the December issue of Horticulture Magazine - look for it on your newsstand if your don't already subscribe.

JANUARY 7-9 (SATURDAY THROUGH TUESDAY) - NORTH CAROLINA ASSOCIATION OF NURSERYMEN ANNUAL WINTER SHORT COURSE AND TRADESHOW. To be held at the Benton Convention Center in downtown Winston-Salem. Registration at the convention center upon arrival.

JANUARY 10 (TUESDAY) - GUEST LECTURE SLIDE SHOW - MR. BRUCE MCDONALD. Mr. McDonald is director of the magnificent University of British Columbia Botanical Garden in Vancouver, BC, Canada and noted for his management of perhaps the most successful new plants introduction scheme in North America. He will be in the state to speak to the North Carolina Association of Nurserymen meeting described above and has kindly agreed to come to Raleigh to address our Friends gathering. He will discuss the programs of the UBC Botanical Garden in what will be an outstanding talk. Meet at 7:30 PM in 3712 Bostian Hall, NCSU Campus.

JANUARY 19 (THURSDAY) - SLIDE SHOW. Slide show number five concluding the series on the European travels - England - Part Two. Meet at 7:30 PM in 159 Kilgore Hall, NCSU Campus.

FEBRUARY 18 (SATURDAY) - GREENSBORO GARDEN SYMPOSIUM. More information later on the program and registration procedures - but put this outstanding program on your calendar to reserve the time to attend.

MARCH 16 (THURSDAY) - RALEIGH - PROBLEMS OF URBAN TREES AND SOLUTIONS. More information later on the program and registration procedures - but note the date on your calendar.

MARCH 21-22 (TUESDAY-WEDNESDAY) - DAVIDSON COLLEGE GARDEN SYMPOSIUM. More information later on the program and registration procedures - but put this program featuring an international blend of renowned plant authorities on your calendar to reserve the time to attend. We hope to snare one of the speakers for a Raleigh program for our Friends on the 23rd so reserve this date as well.

A BRIEF NOTE:

I know, I know, I know, I know - the newsletter is LATE, LATE, LATE - some 9 months late and my mind bubbles with apologies which I want to fill several pages to cover. Perhaps best to just say "it's been an interesting year". Among numerous other things I've learned this year is that it is not a good mix to try a year overseas away from work on a university leave while simultaneously trying to build a new home. The "sabbatic" collapsed in June - and the house repeatedly tried to do the same over a year period. But all is well now - back in school teaching the fall semester courses full time, and three days before completing this newsletter I have finally moved into the new home and life is slowly seeming to fit back to normal again. (After all the agony - the home is wonderful!). With a new computer at home soon - writing on a regular basis will begin and I'm shooting for another issue in November, and a third in December to give our goal of three a year. Those of you who have feared your subscription had ended can rest at ease now - and we will catch up so you get your full value by the end of the year.

In order to get this in the mail in time to get to members before the plant distribution (and to keep it under the 40 page limit I was striving for) I have had to eliminate some standard features for the newsletter this time - so you will not see the "Notes from the Arboretum", "New Catalogs and Plant Sources of Interest", and "Book News" - though I have a huge backlog of things I want to discuss in all areas. So they will be expanded and back again in issue #19. Great things are in progress at the arboretum - and after a superb climate year and excellent help through the summer it has never looked better and I'll have much to report on next issue. Best wishes to all and thank you for your patience and understanding.

NOTES FROM THE ROAD

The "Road" section of the newsletter heads to exotic territory for the next four newsletters as I briefly sketch some of the experiences of my university "Sabbatic" (sic) leave. Though condensed from a planned 12 months to only 5 and elimination of all the Asian/South Pacific schedule - I still managed to drive 21,000 miles through 20 European countries and visited over 170 historic gardens, arboreta, and botanical gardens - as well as another 45 nurseries and garden centers, and numerous museums, landscape sites, etc. In addition to the 5,000 photographs taken, three notebooks were filled and a 350 page journal was kept via use of the portable computer I traveled with. In this first installment of the study leave - the first Europe continent section will be covered with observations of Holland, Belgium, France, Italy, Spain, and Portugal. Section two in the next newsletter will cover the early spring visit to England.

(4/8/88) As I work on the newsletter filling in various sites and observations, it is quickly apparent that there is no way to fully describe all the places visited and wonderful plants being encountered - and still keep the documentary within the limits of this small newsletter. Early writing is lengthy and detailed with a page or more from short visits - later fill-in sections are brief and sketchy even though the gardens may be far larger with more seen (e.g. - the little garden at Strasbourg is far more detailed here than the magnificent collection at the Hillier Arboretum). To save repeated words and some space, I've described size of specific plants following the plant in parentheses with D as trunk diameter, H as plant height, and W as plant canopy width. The further I travel the more I come to doubt the accuracy of the taller height estimates - likely the taller the tree I mention the less accurate it will be - perhaps I should just say small (under 20'), medium (20-50') and big (over 50') but will leave what I've recorded.

(5/15/88) One of the wonderful things about visiting gardens is that every garden has its unique special points of interest - no garden can contain all plants of all ages, nor any one visit encompass the range of interest which varies throughout the year. So even if one has experienced the "great" gardens: Kew, Sissinghurst, Longwood, etc. - "minor" gardens, even an individual private home garden, always have something special and unique to offer the observer which has never been seen before. This commentary will often relate to such experiences at various gardens as to the unique experience for me at that garden differing from my previous personal background and the few highlight points that grabbed my attention from the hundreds or thousands of other possibilities available at that site. Another visitor would undoubtedly have come away with much different focus and reporting. Here goes:

Tuesday - February 2, 1988. A flight from Raleigh to NYC at 6:30 AM and the usual headaches in any passing through JFK Airport - tired of course from several weeks of nonstop effort to "finish" everything in Raleigh for a year - storing furniture, rental of my home, a million things at the office and arboretum - and little sleep the last several days before leaving. How do you pack a suitcase to travel and live out for a year? - in all seasons and through the proposed 30 countries? Seventy percent of the weight load taken is office materials - books, guides, unfinished work, camera, the first 50 rolls of film, and the computer - finally getting a Toshiba 1200 with huge storage capacity and the ability to work off a charged battery for 5 hours (with a backup spare battery for another 5 hours and a recharging plug). Clothes are minimal (as in my life) - what more does one need but a couple pairs of jeans, T-shirts, sweatshirts, and a light jacket? Have an 8

hour wait at JFK and use it on last minute work which I mail back to Raleigh from the airport - and my first experimental efforts on the computer. A crowded, smoky, and unpleasant overnight flight to Paris but luckily able to sleep fairly well from the exhaustion I entered the trip with.

Wednesday - February 3, 1988. Arrive Paris at dawn, easy customs, a taxi ride to the Renault dealer where I pick up my little car for the next 5 months in a surprisingly simple and efficient operation. Head out on the road north with a goal of Holland in mind - but exhaustion takes over and stop in Antwerp in early afternoon for a 16 hour nap of recovery and recharging. Encounter the first price shock of the trip as I find out just how disasterously the dollar has indeed fallen and how much prices have "increased" in the last two years. Most vivid as I go to a "cheap" carry-out fast food place and find out it costs an extra dollar to have a squirt of ketchup added to the french fries (which were \$2.50 to begin with) - ouch! Also discover that the plug on the computer is a safety three prong type - and the European adaptors will only handle two prong types - a hunt through hardware stores turns up no solutions - may be in trouble here.

Thursday - February 4, 1988. A fast and easy drive on through Belgium and into Holland - miss several turns and have to locate a bank for Dutch money, and buy a detailed Holland map to find the small town of Alphen I am hunting. Have an appointment with K. Sahin - a greenhouse grower and seedsman. Find the head offices and the secretary kindly takes her car and leads me across town to the greenhouse ranges where I spend the afternoon looking at the wide variety of plants in development and production. As usual in Holland - everything is immaculate and high tech - full automation in the greenhouses with wide environmental control. The most interesting area is the R&D house where new crops are being evaluated. Hybridization of *Lewisia* for possible bedding plant and pot plant use. (I wonder - would the plant lose its aristocratic cult status among alpine plant enthusiasts if one could buy it for \$2 at K-Mart??). Wide array of *Cyclamen* wild species in evaluation as well as a huge house of seed cultivars of the florist *cyclamen* types. My strongest memory of the day is a block of magnificent variegated *Clivia* plants - didn't know such even existed - apparently in from a Japanese rare plant collector and being worked on to see if seed grown strains are possible. A new "someday" lust plant for me. In the landscape outside I see the first planting of *Skimmia japonica* 'Rubella' which impresses me at many sites over the coming months - a very handsome broadleaved evergreen shrub (normally seen 2-4' in height) with showy red winter flower buds. In the evening my first restaurant meal in Europe - and somehow appropriate to be eating in a Dutch Mexican place - the international blend of culture continues everywhere at all levels.

Friday - February 5, 1988. Am picked up at the hotel by my gracious host and we drive to the town of Bleiswijk nearby where the huge NTV (Nederlandse Tuinbouwvakbeurs) Show is being held Feb 2-6 - the reason for starting my trip with a somewhat out-of-the-way journey to Holland at this winter season. A fellow passenger in the car is Mr. George Park of the Park Seed Company from Greenwood, SC - here to scout out new developments for the firm - amazing how small and connected the horticultural world is today - and we have a pleasant visit on the way to the show. The Dutch Horticultural Trade Fair (NTV) is held in the enormous Bleiswijk Vegetable Auction Building (covering some 10 acres of floor space) and is considered the world's largest covered horticultural exhibition. 1988 is the 15th year of this commercial trade show and features some 450 firms and institutes - which an estimated 150,000 industry buyers will attend from all over the world. It takes most of the day to just scan exhibits walking continuously up and down aisles. My strongest mental image is of just how extraordinarily technical and sophisticated the equipment/technology is which is being sold - and of what amazing quality. Computers are everywhere with buyers packed around the large and glitzy (used in a favorable context) displays - they are a standard part of European production by all growers today - in all aspects from purchasing, environmental control and monitoring, through to shipping and marketing. Although I go to many American trade shows - the sophistication and expense of the displays here are new to me for horticultural marketing. One greenhouse conveyor firm has a block of 9 TV screens with a dazzling film being shown of plants zooming about on conveyors - linking the screens in various combinations with techniques more familiar to me at world's fairs and MTV than in a commercial marketplace. Such things as tissue culture lab displays; a conveyor belt which can make a U-turn; new cultivars of bedding plants, cut-flowers, pot plants, nursery crops (hanging baskets of *Salix caprea* 'Pendula' a clever idea); winter protection fabrics; every kind of machinery imaginable (Ferrari tractors fascinated me!); and new root balling machines showed me the future as European technology eventually ends up in our American markets.

After the show we head back to the greenhouse range of K. Sahin where a technician finally solves my problem of the wrong plug/adaptor system for my computer. Luckily by accident I somehow packed my electric alarm clock in my suitcase and we are able to cannibalize the plug off the cord (the critical part not available in Europe) - and they rewire it all for me - and it works beautifully for the next 5 months. Challenge of the day is eating tiny Dutch pancakes at the trade show (the size of a half dollar) piled with powdered sugar - while wearing a solid black turtleneck sweater.

Saturday - February 6, 1988. A very special day with an extraordinary individual of a remarkable firm - perhaps too many superlatives for a single sentence but certainly true. Today to the small town of Boskoop about 35 miles south of Amsterdam and the center of the small plant nursery crops industry of Europe. This region has been noted as a nursery area for over three centuries and today there are some 2,000 nurseries within a radius of a mile from the center of town producing a remarkable range of high quality nursery plants. The greatest variety of plants is produced by the Esveld firm, first established in 1800 and today owned and managed by Mr. van Geldern. He says they handle the largest number of woody plant varieties of any nursery in Europe - ca. 5,000 (compared to Hillier's 2,000 according to him). By American standards the nursery might be considered small to medium in size with 10 acres in production - but where the average Boskoop firm may be a third to a half acre - it is very large. His market philosophy is to go for the rare and unusual and let others produce the standard quantity selling items - he says most Boskoop nurserymen consider him crazy for such a concept - but he

enjoys it and obviously does well with it. As a result - most plants are grown by him in quantities of as small as three or four, and up to perhaps 50-75 for major items. His sales (wholesale only) go to a world-wide range of collectors, arboreta and public gardens, and speciality landscape firms willing to use a few of an item here and there - and settle for smaller plants which will grow on site.

A description of the range of plants he grows would fill a dozen newsletters so I will mention only a few highlights seen and discussed during our visit. His office gives an idea of his grasp of his business and the woody plant world - about 10 computer monitors are arranged on the various desks - and he kindly printed out lists of addresses, people, phone numbers, etc. for nurseries, people and gardens to see throughout Europe - and it was obvious he could have done it world-wide. He could instantly tell which plants were permitted or prohibited through quarantine for any country - in any combination. Plants, clients, firms, literature are thoroughly indexed for computer access in any number of ways - and shelves of reference books nearby attest to frequent and familiar use. It was also obvious the books needed little use by him as any comment about any plant I brought up - no matter how exotic or obscure - brought forth a solid flow of first hand knowledge about every aspect of it - origin, commercial production techniques and problems - a walking encyclopedia and frustrating to know with my limited time I could only experience a hundred-thousandth, no - a hundred-millionth, of the information he could potentially share.

A short visit easily shows his primary love of *Acer*s - the maples. He says he is an "Acerologist" - a member of a 7 member club of other such people scattered around the world - 3 in Holland, 1 in America (J.D. Vertrees - author of *Japanese Maples*), 2 in England, and 1 in Germany. Together they are currently writing the definitive book on maples which will be published in the near future by Timber Press. Behind his office is an area of perhaps only an eighth of an acre which is his *Aceretum* - with the most remarkable collection of species and cultivars of this genera. At this time of year - two in particular stand out for their winter beauty - a new cultivar of *Acer davidii* X *A. pensylvanicum* which is named 'Phoenix'. Not yet available anywhere - and sadly prohibited from introduction to the U.S. by our quarantine laws - this variety has brilliant red bark on vigorous growth surpassing the *Acer palmatum* 'Sango Kaku' color on a much larger tree. The other plant of outstanding winter bark is *Acer* 'Silver Vein' - another hybrid from the same parents above with dark bark and brilliant silver markings. Others he rates as among the best for winter bark color are three *Acer davidii* cultivars: 'Rosalie', which originated at Kew, 'Ernest Wilson', which originated at Westonbirt Arboretum, and 'Carmen'. The most stunning maple in the collection when in foliage would undoubtedly be a perfect full specimen of *Acer japonicum* 'Aurea', easily 15' in diameter (very slow growing - one "normally" {if that word can be used for a plant rarely encountered to start with} sees at 3-6' in size). It will be worthy of a repeat visit this summer to see it alone (sadly never made). An idea of the excellence of this collection can be gathered by the listing of 340 different maples in his sales catalog - including 148 *Acer palmatum*s! Annually he looks through thousands of seedlings produced by all the crossing which occurs in the close proximity of many cultivars in the *Aceretum* and he most wants to find a red foliated, cutleaf *palmatum* with the 'Seriya' upright growth habit (and red bark like 'Sango Kaku' wouldn't be a bad addition as well! - but let's not ask for the moon) - it should be possible but to date has never occurred. Hybridizers get to work with controlled crosses. We will be sending him scion wood of the fine cultivar 'Margaret B.' developed by Mr. Edingloh in New Bern, NC to add to his collection.

Another plant genera of great interest to me is *Hamamelis* - and he of course only lists 20 different ones for sale in his catalog. He says 'Primavera' is the best yellow, and 'Diana' is the best red. It is interesting that his marketing of witch hazels has the same problem as in the U.S., as most consumers are not shopping when the witch hazels are at peak of bloom in mid-winter. For this reason, he says 'Arnold Promise' is the best commercial cultivar as it is the latest to bloom and thus most likely to hit consumers. 'Primavera' may be 4-6 weeks earlier. Cultivars new to me include *H. X intermedia* 'Barmstedt Gold', 'Nina', 'Sunburst', and 'Vezna' - and I am hopeful we will be able to acquire most of them for our collection which presently numbers 24 taxa.

In wandering through the collections while he took a break to wait on customers who had an appointment with him for this Saturday morning - I came across his collection of *Pieris* - again probably one of the most complete in existence. His catalog lists just 52 for sale! The one that caught my eye as the most interesting and best was 'Toccata' - a dwarf mat type some 5" tall and 10-15" wide and solidly covered with inflorescences. As we got together again and discussed this group, I learned it is one of a series of new introductions he has made (all with names relating to musical terms) and just out this year - it should be an incredible commercial plant when it eventually hits the U.S. market. He says the best *Pieris* are - number one: 'Prelude', another of his new ones (which I later acquired and now have in propagation buildup here); then 'Purity', 'Debutante', 'Valley Valentine', 'Toccata', and 'White Cascade'. In the cooler Dutch climate, 'Flame of the Forest' is not dependably hardy with too much *P. forrestii* blood in it, and things like 'Wakehurst' are out of the question.

The strangest plant seen was *Aesculus hippocastanum* 'Cristata', two feet tall with all growth in cockscomb flattened crests - obviously very slow growing, difficult to graft, - and sadly, not for sale in his catalog (and banned by U.S. customs even if it were). But I did find some 40 other assorted plants I can't live without to order for our collection depending upon their availability in his stock.

In his office I was shown two books (available only in Dutch but still potentially very useful for plant professionals or enthusiasts) of great value. The first good travel guide I've seen to the arboreta and public gardens of Holland - "Groei & Bloei: Tuinengids voor de Lage Landen" - 144 pages. Copyright 1987 from Koninklijke Maatschappij Tuinbouw en Plantkunde, Postbus 87910, 2508 DH, Den Haag, The Netherlands. Price 18.75 Guilders. It has excellent detailed maps of how to get to gardens - subdivided by region of the country, hours open, acreage, phone number for contact, and I'm sure much more that I could not read. The other book is "Naamlijst van Houtige Gewassen" by H. J. van de Laar - a 252 page list of correct Latin names of all nursery crops produced in Boskoop for growers to refer to in preparing their catalogs, sales, etc. It is available (I think - if I can interpret the Dutch text) from Proefstation Vor de Boomteelt, En het Stedelijk Groen, Boskoop, The Netherlands. Price for overseas shipment is 25 Guilders. (Check banks for current conversion rates).

A visit to an excellent modern retail garden center in Boskoop offered many new ideas for potential U.S. marketing. It was interesting to see the wide variety of shrub standards - plants normally grown as multi-stem shrubs - but trained to a single "trunk" to a height of 3-5' - then pinched, perhaps repeatedly, to produce a "head" of stems at an elevated height. Plants handled this way included: Forsythia, Cornus alba, Weigela, Philadelphus, Viburnum opulus 'Sterile', Cornus stolonifera 'Flaviamera', Ribes 'King Edward VII', Hibiscus syriacus, and Prunus triloba and nipponica. I also admired (and regret not buying) small pots of an adult form of English ivy called 'Humpty Dumpty' - beautiful miniature shrub trees 3-5" in height - would be a great addition for a rock garden.

Sunday - February 7, 1988. Pack up and leave Alphen after a pleasant three-night stay - heading now to the south of France for several weeks of writing and catching up on the mountain of unfinished work I brought with me. A must stop just a few miles off the main highway north of Anthwerp, Belgium is the Kalmthout Arboretum in the town of the same name. An old and distinguished private woody plant collection of the De Belders family - but now a public municipal property due to a fall in the family finances of diamonds and industrial investments. After plotting my way to the town and finding the arboretum (which is well marked and signposted for visitors) the sign at the gate indicated the garden is open to the public March 1 to November 15 (which seems strange considering the most famous part of the garden is its Hamamelis - Witch hazel - collection which peaks in January-February bloom). After waiting to see the noted witch hazels of the garden for fifteen years; with an open gate ahead and no one in sight - the garden is mine for solitary enjoyment.

At first the garden is a disappointment - plants seem overgrown and in poor maintenance, not very interesting, and the grass paths are riddled with some type of gopher/groundhog mounds of soil and thoroughly saturated with recent rain - my nice rubber boots are in the car trunk and I'm squishing around in soggy running shoes. But things get better and better as I penetrate the collection. Hard to estimate the size - perhaps 15-20 acres. A strong collection of conifers provide fine background for the deciduous collections; and beds of rhododendron, heaths and heathers, and perennials provide a ground plane.

Finally see the first witch hazel in the distance and my heart begins to pump harder - it is a 12' tall and wide H. 'Limelight' with pale yellow flowers - and surrounded by a grove of many other cultivars ranging from 10 to 25' tall in bloom with yellow, orange, and red flowers. The finest witch hazel display I've seen and difficult to restrain myself in using up film. Observe that for most effective display - such plants need to be planted where they have a solid dark evergreen foliage to display the flowers again - such as Chamaecyparis or Thuja - preferably on the south side for good highlighting of the flowers (although when backlit against a black background they are most dramatic). Also with my partial red/green colorblind eyes - the yellows are far more effective than the reds which I cannot distinguish until right up on them.

Many fine old conifers highlighted by a magnificent Picea abies 'Nidiformis' in the center of a large lawn area behind the house. Planted in 1900 it is now 12' tall and 20' wide with a trunk which lifts the canopy off the ground to allow viewing under the plant. The plant of this garden which will most stick in my memory though is a tiny thing discovered by accident just before leaving - Cryptomeria japonica 'Koshiju' - new to me and a tight groundcover mass 4" tall by 18" wide with much the appearance of a Juniperus procumbens 'Nana' - but definitely a Cryptomeria. I want one badly. I am a bit surprised by their piling of branches on most evergreen azaleas and many rhododendrons for winter protection in this climate which seems relatively mild when looking at the total range of plants grown. Other things which stood out include a beautiful Viburnum X bodnantense 'Dawn' in full bloom in front of the house, a 20' Pinus sylvestris 'Aurea', a 30' Juniperus drupaceae with tight columnar form and wonderful texture, beautiful old specimens in a grove of Betula jacquemontii - the best I've ever seen, many fine old Stewartias which must be a delight in summer, and lastly - a fully budded Magnolia kobus var. borealis (18"D, 38"H, 45"W). It must be stunning when in bloom in just a few weeks.

Back to the car for an energy fix of chocolate and head south - driving from 2 until 8 PM to get to Strasbourg in eastern France. The flat countryside of Holland/Northern Belgium begins to change markedly around Brussels with increasingly hilly country. In France the countryside is so beautiful with the long lines of various trees planted in rows along even small country roads. In this grain country with predominantly smooth green fields on undulating terrain - there are views of trees silhouetted against the sky in a way I cannot recall seeing anywhere in the U.S. - magnificent. (Childhood memories of Oklahoma wheat fields obviously kicking in here). The French really missed out in not creating a specific landscape style based on the dramatic effects available in this region - I can see a Chateau facing a ridge of solid green with a single row of architectural trees outlined against the sky - simple and stunning.

Monday - February 8, 1988. Strasbourg, France - Louis Pasteur University Botanical Garden. A rather unexpected stop due to an overnight in the city as a stop point on the drive south to the French Riviera for a few weeks of writing and sunshine. Looking in the guidebook I see the garden listing - and feeling it is unlikely that I will pass this way in the future I should "do" the garden - but not expecting much. A modest garden of 9 acres created in 1880 (at the present site - originally started in 1619 at a different location) for use by the botany department of the university - definitely an urban garden; walled in and now surrounded by the city and university. In the center of the garden is an old four story university planetarium building topped by a dome with telescope opening - today outmoded for research use but a beautiful architectural background for the garden. The botany department building of some 6 stories with a phytotron on the roof towers over the garden and a contemporary conservatory beside it also dominates the old garden. In the garden center is a plant families garden - with several older small greenhouses including a small traditional flattened circular house popular in the late 1800's for growing and display of the giant Victoria regina waterlilies.

I am always trying to figure the climate of an area as reflected by the plants that can be grown - and comparing that to the Raleigh area - and as always it is not a consistent pattern. Strasbourg is obviously a relatively mild area as they are growing unexpectedly marginal (by my guesstimation) plants - Chimnanthus nitens, Taiwania cryptomerioides, Cupressus funebris and abramsiana, Cunninghamia

konishii, *Pittosporum daphniphyloides* (new to me and worth a try at home?), *Umbellularia californica*, *Ungandia speciosa*, and *Agave parryi*. On the other hand - plants which would be reliably hardy in Raleigh at even colder temperatures than those above would take - seem marginal here. Likely due to the lack of summer heat to mature and ripen wood - plants such as *Magnolia grandiflora*, *Viburnum tinus*, *Nerium oleander*, *Quercus suber*, *Lagerstroemia X amabilis* (new name to me?) and *Eriobotrya japonica* which obviously are periodically damaged or freeze to ground. Many are mulched heavily or wrapped in enclosures for added protection - and are planted in a protected microclimate cove directly south of the main botany building. I continue to ponder the problem of *Hebe* adaptability to N.C. - a large collection here doing very well yet we cannot grow them very satisfactorily - my current theory that the summer night heat lowers the carbohydrate load and reduces hardiness from that in areas with cooler summers. *Hebes* remain frustrating to me as they are so grand - and have been so unpromising at the arboretum.

The wintersweets, *Chimonanthus praecox*, are in full bloom and perhaps the best I have ever seen - several plants 10' high and as wide in full bloom - flowers paler in color than my experience with the ones in Raleigh - but perhaps at the end of a long bloom period and fading. A good collection of *Hamamelis* species with most still in bloom (but nowhere as showy as the *X intermedia* hybrids seen yesterday), snowdrops, *Crocus thomasiana*, *Helleborus foetidus*, handsome winter foliage of *Cyclamen cilicium*, one of the best *Abelophyllum distichum* ("white forsythia") I've seen in full flower, and the best *Daphne mezereum* I've ever seen (3'H,2'W) in full fragrant lavender bloom - wonderful.

Other plants which merited attention on the walk through included a fine *Torreya californica* (15"D,35'H), a beautiful grove of 5 old bald cypress, *Taxodium distichum* - up to 4' diameter trunks and 75' tall with an abundance of "knees" at the water edge, an enormous *Pterocarya fraxinifolia* (5'D,60'H,70'W), a dramatic 60' fastigate oak not noted until outside leaving the garden - and I will probably always regret not taking the ten minutes to reenter the garden and walk around to see what it was. In a large fern collection the best of the evergreen types was *Phyllitis scolopendrium* - beautiful with unblemished 15" rosettes of leaves and it should be great in Raleigh. Uncommon species of woody plants included *Meliosma oldhamii*, *Ziziphus jujuba* (strangely miniature here in all respects with twiggy growth and tiny fruit), *Sycopsis sinensis*, *Trochodendron aralioides*, *Xanthoxylum bungei* with its large dramatic "teeth" on the bark, *Phillyrea media* (which should be an excellent broadleaved evergreen shrub addition for Coastal and Piedmont N.C.), and and a *Parrotia persica* with magnificent peeling bark patterns. Altogether a worthwhile two hours of exploration.

Leaving the garden I head east across the Rhine River into Germany and south to Basel, Switzerland - somehow so idiotically and typically American to be entering my 6th country after only 6 days in Europe! South of Basel I go through a tunnel and on the other side the clear beautiful day with green fields is gone and I'm driving through a blinding snowstorm - Switzerland lives up to its reputation. A beautiful quick drive south through the country Bern, Lausanne, and Geneva - in and out of the snow - wonderful examples of microclimate effects with obvious temperature/snow effects according to elevation and proximity to the lakes. The most memorable image of the country on this quick pass through is from an innocent stop at a highway snack shop for a little bowl of soup and a 6" microwaved pizza without looking at the price list and translating it first - \$17!! Time to head to another country with better dollar value for the moment. As I go through Geneva my road passes directly in front of the Botanical Garden - a favorite from a previous visit so I must stop even though it is nearly dark and rain/sleet/snowing. The new greenhouse complex is nearly finished with three different structures - one very impressive with dramatic height and stairwells in a somewhat postmodern structure to take a visitor up to the tree tops when mature palms eventually exist in the building. There are so many fine conifers in this garden (as throughout the city - this climate perfectly suited to them) - huge *Cedrus*, *Cupressus*, *Sequoia*, etc. The finest specimen imaginable of *Cupressus glabra* 'Fastigata' (45'H, 12'W) and in the rock garden a dramatic weeping redwood, *Sequoia giganteum* 'Pendula' (25'H). The rock garden is still relatively dormant with little flowering but *Cyclamen* have naturalized throughout and many are blooming - and I find a single plant of *C. africanum* huddling under a rock in the cold. Continue on in heavy snow, darkness and winding roads as I go through the mountains toward France.

Tuesday - February 9, 1988. A short drive in the morning to Lyon - second largest city in France - and a long frustrating search for the Parc de la Tete d'Or (which I pass within two blocks of on two occasions while hunting). This is a 260 acre English style park built between 1856 and 1862. There are many sections of varied gardens - with a mention in my guide book of a "Mexican" garden - which intrigued me to hunt it out to find out just what it would be. In February it is less than spellbinding as it is mostly an area with sub-tropical and tropical plants bedded out for summer display. Hardy cacti and agave displays are shielded against winter rain damage by a temporary overhead polyethylene film house which is removed also in summer. And other plants such as bananas are overwintered like herbaceous perennials with heavy mulching in wire rings. But the rest of the botanical garden is definitely worth a visit. A small collection of conifers contains some superb specimens - the largest *Pinus bungeana* I've seen in Europe (60'H, multi-trunk base with many 2'D trunks), a *Ginkgo biloba* 'Pendula' (10'H, 18' W), *Juniperus deppeana* (55'H), and a grove of 3 *Cedrus atlantica* 'Fastigata' (50'H). Other special plants included a magnificent perfect ball-shaped shrub specimen of adult *Hedera helix* (English Ivy) (6'H,9'W), *Zelkova crenata* (4'D,85'H), and a fine "Winter Garden" at peak of winter flowering display - *Viburnum X bodnantense* 'Dawn', *V. fragrans*, *V. farreri*, *V. tinus*, *Cornus mas*, *Chimonanthus praecox*, *Jasminum nudiflorum*, many other woodies, *Hellebores*, and my first experience with a plant learned from Elizabeth Lawrence - the winter blooming iris - *I. unguicularis*. One could spend an entire day in the park easily - but my schedule is pressing so reluctantly head out with a long drive ahead.

A fast drive (trying to stay out of the way of the mad Europeans flying down the superhighway toll road - they treat 90 mph as though you were a standing-still traffic hazard!) south to Marsailles on the Mediterranean coast.

The climate changes from Zone 7 to Zone 9 during the drive through mostly fruit production country - grapes, peaches, apples, plums, pears, olives, some citrus, etc. *Spartium junceum* and *Cytisus scoparius* are in showy yellow bloom on the roadsides. Decide to bypass Marseilles as the guidebook says there is much crime and robbery as it is a drug dealing and entry port city for southern Europe. My first view of the modern development of the crowded Mediterranean French Riviera area - highrise apartments everywhere, heavy traffic, ugly and noisy. Anxious to get out of it and fear everything ahead will be like it.

See a huge modern garden center on the highway and stop to browse it in the few minutes left before it closes. A most wonderful modern center which has just opened - Jardimerie Marrus Ferrat. From my car in the parking lot I can see one of my lust goals of this trip - *Calocedrus decurrens* 'Variegata' - the variegated form of the Incense Cedar native to the Pacific Northwest. Make an excited mad dash into the sales yard - have only seen one plant in all my previous travels over the years - in the private garden of Adrian Bloom in England - and suddenly here is an 8'H, 5 gallon specimen for sale! Too early in the trip to consider and sadly too big (and expensive) as well - had it been a gallon can I would have grabbed it certainly. Becomes the first of many experiences with this plant over the ensuing months - find it everywhere in commercial use in Italy, France, Spain, Portugal - in botanical gardens, in commercial landscapes, for sale (always larger plants though) - with the largest seen about 25'. A most beautiful plant with large white/yellow sections of foliage - and I am mystified as to why it is so common in these countries and yet virtually unknown in conifer-mad England and Holland. With the heavy international nursery industry trade - cannot imagine why it does not appear in the market there as the species itself is very common and well adapted. Also have never seen it in the U.S. and wonder if it is even in a private collection somewhere. It would be a wonderful landscape plant in the Pacific northwest where the species is native. (At the end of the trip I obtain cuttings in Paris which are stuck at present, 9/2/88, but don't know if they will root and survive). Also intrigued by containers of English ivy - 3 gallon pots with 8' stakes with the ivy to the top of the stake - what is their function in the landscape? Very fine sections of mowers and tillers, irrigation equipment, etc. as well as the large plant displays - very high quality and obviously much of the material comes from the Italian nursery industry.

A long drive after dark east along the Mediterranean coast trying to reach St. Tropez - my goal to settle into for some days of writing. I'm amazed by the brilliance and intensity of the halogen lights on the car (which I understand U. S. manufacturers have managed to have banned in the states to prevent competition of a different system - a pity as they are such an improvement) - winding roads through many areas of *Quercus suber*, the cork oak, where the bark has been stripped for commercial cork harvest and the red peeled trunks glow in the light of the headlights. In this off-season, St. Tropez is a deserted town and though late at night when I arrive - it is easy to get a room (Hotel Chimera) and settle in.

Wednesday/Thursday - February 10-11, 1988. The hotel proves to be a delight - with breakfast of French bread and preserves I dream about for the rest of the trip and pots of coffee. The dining room has large windows at the back looking into a courtyard garden and at the front out to a planting of the Italian pine, *Pinus pinea* (which is an excellent plant in the NCSU Arboretum (now the JC Raulston Arboretum)) and bright yellow-flowered *Acacia* trees smothered in bloom, beach, water, and opposite hills with white buildings in the distance. Though my room is too small to turn around in - the owner allows me to use a table at the window in the dining room to sit at and work through the day and evenings. The view is magnificent with blue water and white puffy clouds - I'm ready to stay here weeks to write - does it seem reasonable to fly here each year to get productive work done? It is a short walk to the resort harbor area of St. Tropez - packed during the summer season - but deserted now though the weather is still magnificent - most stores and restaurants are boarded shut. The harbor is still full of enormous yachts - but more in storage than active use. Drive around the area during the time here - really beautiful community and to me this would be the only season to really enjoy it. Don't think I would care for the crowds and expense of the "in"season. In the real estate agent office see that one can get a modest 1-2 bedroom condo apartment for \$200,000 and up.

In a walk through a cemetery see a regional custom of placing wreaths of ceramic flowers on graves - many very elaborate and quite beautiful. With the detail and ceramic techniques it would seem they should be fairly expensive and am surprised they are not stolen or vandalized. Would be a fascinating folk art to collect - yet in a sense impossible without robbing as they are not a market item. See the native *Viburnum tinus* with white flowers and dark blue fruit in all gardens, the native *Vinca difformis* with flowers from pale blue to white and would like to try it in Raleigh - also plants of *Iris unguicularis* (including white flowered types) are quite common and flowering everywhere. Rosemary and Lavender grow so vigorously here they are sheared and used as 3' hedges - also in full bloom.

The writing goes well - get much office work done and do a mailing back of a disk to my office with doubtful hopes it can actually be translated and used there. But on the evening of the 11th after a long, full day of work - I accidentally hit a tiny switch on the left side of the computer - which scrambles and erases virtually all my log for the trip - and I'm devastated - so much work down the tube and not replaceable as many of the details are gone in my mind - and feel there is not time to back up and redo everything - has been hard to just keep up daily let alone go back. (But finally get started on the job and after several weeks do get everything replaced). So demoralized (and fearful of it happening again) I decide to temporarily give up the intense writing planned and hit the road again.

Friday - February 12, 1988. Pack up in the morning and head further east. Stop at various garden centers and sculpture/pottery places on the road. Varies from quite sophisticated - which I would expect from the great wealth of this area - to concrete Snow White and the Seven Dwarfs figures (which I would actually love for the arboretum but far too heavy to carry). Various stops in Cannes and Nice - again virtually deserted in the off season. I'm not a crowds and beach person anyway - so not much to appeal to me in any of this area. Head on to Monaco and finally find an affordable dive to unload the car into. Walk into town and enjoy the parks and plantings of the Palace area - always fascinated by the abundance of rooftop gardens in this tiny land-scarce Principality. Drive to Cap Ferrat to try to visit the Las Cedres Botanical Garden - a private garden which has fine collections of sub-tropical plantings including a very large *Cupressus*

cashmeriana. Unfortunately, my credentials seem to have little value to the guard and I am not allowed to visit the garden. Substitute a stop at a landscape contractor operation across the street to see what can be grown and used here - quality specimen plants of all kinds for sale in this exclusive community much like Beverly Hills. A 12' *Magnolia grandiflora* with a 4' ball sells for about \$700 - and heads would shake in N.C. at a 6' seedling sweetgum, *Liquidambar styraciflua*, going for \$60 (gumballs and all)!

Saturday - February 13, 1988 Today a brief hop over the border into Italy to visit the once grand and famous garden, La Mortola - today the Hanbury Botanic Garden. The garden is located directly on the Mediterranean in the town of La Mortola and is well signposted from the roads of the area to find it easily. It was founded in 1867 by Sir Thomas Hanbury who also gave the land for Wisley Garden of the Royal Horticultural Society in England. After his death in 1907, the garden was continued by his son - both of whom had continual professional contact with Kew Gardens as well as other botanical gardens throughout the world. It was perhaps the most noted collection of plants in Southern Europe with over 7,000 rare species of subtropical and temperate plants at a beautiful site with fine architectural features. When it was willed to the local Italian government - bureaucratic problems developed and financial resources were not available to maintain the collections - and the garden went into serious decline with perhaps less than a thousand species still remaining today. Recent efforts are beginning to repair the damage and renew the plantings. The visit is interesting and there are certainly many fine plants left to see - but an air of sadness to me in what has been lost so quickly after the century of building and accumulation of outstanding collections.

Among the plants of interest: my first large outdoor specimen of *Cupressus cashmeriana*, the most beautiful of all Cypresses with its branches of weeping bluish, green foliage (25'H) and a large collection of mature Cycads. The terraces around the house (though barricaded off from visitors now that the house is abandoned) have beautiful sheared formal hedges of both rosemary and lavender - a whole different way to envision these common herb garden plants. Arborists are working at removing enormous 100'+ Eucalyptus trees and the sound of chain saws and the loud crashing of huge branches as they fall long distances is perhaps my most lasting memory of the garden. At the base of the hill in the garden is a section of the two thousand year-old ancient, stone-paved Roman road which passed through this area - still in use today.

The nearby town of Ventimiglia is one of the most important cut flower production areas of Europe with hundreds of tons of flowers produced on steep terraced land facing the Mediterranean with mild climate from the nearby water protection. At this time of year - 5-8' shrubs of Spanish broom, *Cytisus multiflorus*, with its white bloom, yellow-flowered Acacia trees up to 15', and unheated polyhouses with carnations are the main things in bloom.

On the way back to Monaco, I note a tiny sign on the highway in Menton-Garavan (France) which directs me to the Val Rahmeh Botanical Garden. This is another garden originally created by an Englishman, Lord Radcliffe in 1905 and eventually acquired by the government in 1966. In a secluded canyon off the road, a 2.5 acre garden contains a wide variety of plants from all over the world. Among the items of special interest - a 25' *Yucca guatemalensis*, a 30' *Photinia davidsoniana*, an 18' *Mallotus japonicus*, a *Clematis armandii* vine with a 3" diameter trunk!, a *Celtis australis* 'Variegata' - the first variegated hackberry cultivar I've heard of, and another of the Asian "mates" to a similar American species - *Decumaria sinensis* (much like our vine, *D. barbara*) new to me and interesting for potential trial as it is described as being evergreen with very fragrant flowers.

Sunday - February 14, 1988 Monaco. A morning visit to the noted Jardin Exotique - an amazing cacti and succulent collection founded in 1913 by Prince Albert I, and later opened to the public in 1933. It must be perhaps the most dramatic site of any garden in existence as it was developed on the steep face of a rocky cliff with winding paths and stairwells to move up and down through the various areas. The vertical height of the garden is likely greater than the horizontal width! The plants have grown to amazing size in the 75 years of existence and provides a truly "exotic" fantasyland of bizarre plants. Unfortunately for horticulturists - very few are labeled - but it is still fascinating as a garden environment. From every terrace one looks out over the small Principality to the Mediterranean - and down to the roofs of highrise buildings directly below with a wide variety of rooftop landscaped gardens. Perhaps nowhere else on earth is there as high proportion of rooftop gardens to developed urban land area. Then on the road again to head west across southern France with a stop in Perpignan near the Spanish border for the night.

Monday - February 15, 1988 Perpignan to Barcelona. As I head down the Costa Brava area of the Mediterranean from France into Spain - urban coastal development is apparent everywhere as this region explodes with retirement communities of primarily French residents. When Spain recently entered the Common Market - residents of other Common Market countries could move there and continue to receive pensions, etc. from their home country. With the much lower cost of living - it has become a major site for the French to move to. The area has been a cut flower, winter vegetables, and early strawberry production region - but these are rapidly being replaced by high-rise condo developments. Most of the strawberry production is in hoop type, polytube houses and picking is apparently in full season. A stop of several hours in Blanes (just north of Barcelona) yields two of the finest quality plant-oriented gardens seen anywhere in Spain. The Marimurtra Botanical Garden was founded by a German, Carlos Faust, who moved to Spain as a youth, became prosperous as a Barcelona businessman, and started the garden in 1921. He worked with the garden for 30 years and at his death at the age of 78 he left a trust to keep it in existence. The garden encompasses an area of 10 acres directly above the coast with steep and beautiful cliffs down to coves and beaches below - beautifully accentuated in the garden planning with designed formal vistas to focus on the dramatic rugged shoreline. The horticultural collections are excellent, well-displayed, labeled and maintained - the entrance scene with cacti, agaves, etc. is quite spectacular. It was interesting to see *Euonymus japonica* 'Aureovariegata' as a beautiful, scale-free, single trunk specimen "tree" (6"D, 10'H) surely one of the finest specimens in existence of this clone so widely grown in the U.S. as scale food. The garden is obviously popular with the public with many buses and crowds of tourists coming through even at this off-season time of year.

Less than a mile away is another superb public plant collection garden which by contrast is very rarely visited. The Pinya de Rosa Botanical Garden was founded in 1945 by a civil engineer, Don Fernando Riviere de Caralt who still owns the garden today. The garden focuses purely on the collection of as many species of cacti and succulents as possible arranged in taxonomic groupings. Emphasis is on collection of species seed from wild populations and each year some 1,500 accessions are sown from around the world. Today the garden contains over 7,000 species and is considered one of the finest existing collections of these plants. The Opuntia (Prickly Pear cactus) collection is the finest in existence with over 600 species - also Agavaceae, Aloes, Yuccas, Mesembryanthemaceae (131 genera, and 780 species in this family alone), Lithops, etc. Something is flowering year-round here with peak cacti flower display April-August. At this time of year - masses of California poppies in the beds provides showy color. The only person seen during the visit was the ticket seller at the gate - a pity for such an outstanding plant collection to be so little enjoyed - while crowds thronged through another garden so close by.

After a heart-stopping near crash at a blind intersection (the closest to disaster in the 5 months) as I left the town of Blanes - a drive on down the coast to Barcelona - with cranes and condos everywhere transforming the region (a new Renault dealer for the new French residents every half mile on the road). A superhighway roars into Barcelona with walls of apartment buildings on either side (I feel like the famous highway scene in the movie 'Brazil') - and totally intimidated I drive and drive desperately (hunting gas with needle on empty) - finally being spit out on the other side of town in depressing slums. After finally finding gas (and noting the irony that you can use credit cards to pay highway road tolls in Spain - but they cannot be used to buy gas at the highway stops!) - I retreat to the amazing Monserrat monastery area in isolation on the top of a dramatic rock mountain some 20 miles away where things calm down and I can find a room in peace.

Tuesday - February 16, 1988. The roads and mad traffic of Barcelona have so intimidated me I debate skipping the town entirely and just moving on - but I have longed to see the Gaudi cathedral and buildings so intensely for so many years - so steel myself and sail back into the madness - lost all the time but finally seeing the towers of the cathedral in the distance and working my way to it. Parking is alone worth a chapter of writing - definitely free form with cars sometimes parked in the street four layers deep from the curb. But the cathedral is every bit as magnificent as dreamed - and a surprise to me that the government has resumed construction after so many decades in the uncompleted state - with 4 more of the massive spires now nearly completed. A climb to the top through the spiraling stairs in the spires is a terrifying (didn't realize I had such height fears until this moment) and exhilarating experience. Then another mad traffic nightmare to hunt the Parc Guell - a unique fantasy urban park designed and started by Gaudi - but like so much of his work - uncompleted due to the enormous complexity of the unorthodox freeform designs. An amazing fantasy of rough rock, wrought iron, and glazed tile construction well worth any travel agony to experience.

Heading out of town in the evening - I stumbled onto perhaps the finest - or at least most dramatic - piece of contemporary commercial landscape development seen in the 5 months in Europe. The Catalyan Bank is a pair of 9 story hexagonal buildings with balcony planters on each floor all around the buildings. A superb and wide array of plants have been installed with many weeping and cascading forms combined with flowering plants to give the entire structure the feel of a "Hanging Gardens of Babylon". At ground level, a pool with fountains and attractive landscaping completes the picture. Barcelona is booming and exploding with construction as they prepare to host the next Olympics in 1992 - and in spite of my comments about the traffic - a city of many wonderful things well worth seeing. But take a plane or train in - enjoy the public transportation and forget driving to enjoy the place!

Wednesday - February 17, 1988. A transition day with a drive from Barcelona to Valencia gradually getting into more and more of the famous Valencia oranges which take their name from the city - until there are solid groves surrounding the city when it is reached. A bit easier this time - with a good information center near the University of Valencia at the edge of town. Find a hotel and unload bags to the room (have been warned many times an essential must in Spain and Portugal before any sightseeing due to the danger and likelihood of robbery of anything left in a car). Long walk around the city orienting myself for serious photography tomorrow. A fascinating and relatively unique landscape feature with a 200-400 yard wide, shallow riverbed circling through the center city area - dry most of the year. The city is developing the riverbed as an urban park with sports fields, landscaped parks, and even a nursery to produce plants for use in the city and parks. Development is kept to a nature to not dam up water, or to be damaged by flooding of the river when it sporadically occurs. A most useful technique to add green space to a city which grew up over the centuries with tight building development and little green space.

Thursday - February 18, 1988. Valencia. A long but pleasant day of trekking all over the city on foot to see three main garden displays. The Monforte Garden was a private garden, now open to the public near the large University of Valencia campus. The main point of interest is an endless mass of formal sheared hedges throughout the garden - and a point learned by watching the gardeners clip them. How do you maintain hedges with level top surfaces on undulating terrain and steep slopes?? Very simple once thought out - they use a clear plastic tubing filled with water and bamboo stakes with string tied to mark correct levels desired. A worker holds one end of the tubing with the water level at the desired height while the other worker places stakes along the hedge at several feet intervals using the water level in the tube as a guide and marking on the temporary bamboo stake what height to prune to. After the entire hedge is marked, workers can quickly go through and shear from marked stake to marked stake. The Royal Gardens nearby (Del Real o Viveros Municipales) is built where the royal palace once stood and today is a varied public park with children's playgrounds (including a huge complete auto driving layout of overpasses and intersections to teach driving rules in miniature - and do the Spanish ever need better driving skills!!).

After lunch (this is Spain - so I have Chinese food of course) on to the Valencia Botanical Garden ("The finest botanical gardens in Spain" according to my travel guide - but not so). The original garden was founded in 1567 but the present garden has existed at its site since 1902. The roughly 4 acre garden is enclosed in a high stone wall and is laid out in formal geometric bed arrangement - originally according to family relationships. Each bed is outlined in a wide border of *Ruscus hypoglossum* (which seems the world supply after awhile). The garden is most impressive for the huge specimens of many trees - including many U.S. species - *Diospyros virginiana* (persimmon - 3'D, 80'H), *Quercus macrocarpa* (bur oak - 4'D, 80'H), *Quercus virginiana* (live oak - 5'D, 65'H), *Aesculus californica* (1'D), *Maclura pomifera* (Osage-orange - 2.5'D, 45'H), *Carya olivaeformis* (pecan - 5'D, 95'H), *Torreya californica* (15"D, 30'H), *Liriodendron tulipifera* (tulip tree - 4'D, 80'H), *Bumelia lanuginosa* (1'D, 35'H), *Ungandia speciosa* (20'H), and *Populus deltoides* (cottonwood - 4'D, 70'H).

Among the more interesting exotics - for either size or rarity - are: *Podocarpus neriifolius* (1'D), *Osteomeles schwerinae* (China - a perfect mound 20'H and 25'W), *Cephalotaxus drupaceae* (3'D, 40'T), *Diospyros duclouxii* (1'D, 45'H), *Grewia oppositifolia* (18"D, 40'H), *Buxus balearica* (8"D, 30'H), *Aphanthe aspera* (2'D, 55'H), *Quercus serrata* (3'D, 65'H), *Cryptomeria japonica* 'Elegans' (1.5'D, 30'H), *Sophora japonica* (5'D), *Yucca australis* (9'D at base, 25'H), *Zelkova crenata* (5'D, 100'H), *Chorisia speciosa* (6'D, 100'), and possibly the highlight of the day for me - a mediterranean redbud, *Cercis siliquastrum* (2.5'D, 30'W, 35'H).

Friday - February 19, 1988. Valencia - Madrid. Leave Valencia and head into the center of Spain away from the coast for the first time. Much varied terrain during the drive - at times rugged like the Badlands of the Dakotas, another time more like the Rockies, then flatter plains areas with grains, and varying crops of oranges, olives, etc.

Madrid is the largest city and the capitol of the country which sprawls for miles in every direction. My maps are none too good and again the entry is chaotic and frustrating - weaving through crazy traffic, eventually lost and not sure what part of the city I am in. But eventually zoom by the Prado Museum which is adjacent to the Madrid Botanical Garden which I have come to see - and park as soon as I can after that within walking distance and find a room. In all my travels in all the countries I have been in I have never seen so many police giving so many parking tickets - every street seems to be swept every few minutes - amazing. After settling in - walk back to the garden which is the finest botanical garden in Spain - and enjoy a fine afternoon there with beautiful weather.

The garden was founded by Ferdinand VI in 1755 and was moved by Carlos III to its' present site in 1781. It was at that time one of the most celebrated botanical gardens in Europe, partly owing to the excellent botanical school, but mostly because of the large quantity of then-unknown plants brought home from expeditions to the New World. Very likely many of the largest specimens of American plants in Europe today are located either in Spain or Portugal as their first point of introduction in the years before the English and French started their plant exchanges. The main section of the garden is laid out in formal beds outlined in *Buxus sempervirens* - originally as taxonomic plant family displays (which still exist in part of the garden). One of the oldest plants in the garden is a 200 year old *Cupressus sempervirens* - the Italian Cypress (80'H); and there are numerous old specimens of *Celtis australis* (4'D, 75'H) and *Zelkova carpinifolia* (4'D, 90'H). My notes include pages of lists of plants - a few of varied interest: *Cercis siliquastrum* (1'D,20'H), *Taxus baccata* (18"D, 45'H), *Maclura pomifera* (2'D, 35'H), *Rhamnus daiurica* (China - 1'D, 22'H), *Sequoiadendron giganteum* (6'D), *Erica arborea* (6'H), *Rhus toxicodendron* (Poison Ivy!) (6"D, 8'H, 6'W), *Chimonanthus yunnanensis* (7'H) and *Parrotia persica* (15"D, 30'H). New to me were the *Cornus torreyii* from California, *Genista valentina* from Eastern Spain, *Neillia longiracemosa* from China, *Syringa tigerstedtii* from China, and my first look at the evergreen *Parasyringa sempervirens* which I've wanted to try in Raleigh. The showiest flowering came from a tree of *Prunus dulcis* in full bloom.

Nearby is a huge park much like Central Park in NYC but laid out in the French formal style so widely used in Europe from the 1750's to 1900. There are wonderful lakes, pavilions, an art museum, a Crystal Palace conservatory (with no plants but a sculpture display inside), some amazing many-layered topiary plants, and perhaps the most phenomenal American bald cypress, *Taxodium distichum* in existence (12'D, 100'H) with at least seven major branches from a point where the terminal was obviously destroyed when the plant was 15' high.

Saturday - February 20, 1988. Madrid - Granada. A few hours available in the morning before heading south and in weighing the options I decide against going to the Prado Museum (one of the greatest art collections in the world) as I have seen it on a previous trip; and opt instead for a lesser known (to foreign visitors) National Museum of Anthropology new to me not far away. Turns out to be one of the best decisions of the trip - with an incredible history of man. Although everything is labeled only in Spanish, and no photographs are allowed (sob!) - it is still magnificent. Some highlights - Canary Island archeology much like American Hopi Indians, magnificent animal rock carvings from ancient Sahara cultures, one of the best Egyptian displays seen anywhere, early Spanish silver and gold, Roman wall mosaics, 3' X 5' engraved bronze plates, an amazing mosaic of the 12 Trials of Hercules, Islamic art, and upstairs a thorough display of Spanish colonial period work - perhaps highlighted by Cordoba filigree silver work.

Leave the city and head south toward Granada in a long drive. The nation is building a major new highway which will shorten driving time to the coast by hours and I bounce on and off it in various stages of development during the afternoon. Perhaps most amazed by the miles and miles and miles of new highway plantings going in the center between the lanes - the world supply of oleanders which will be stunning in years to come. Olives are everywhere and eventually begin to be astonished by their sheer numbers and extent of cultivation. Somewhere I see the statistic that in 1900 there were an estimated one hundred million olive trees in Spain - one wonders how so much fruit (and oil) can be consumed? Most harvesting is completed but there are still plantings and areas where workers are beating the black fruit from the trees for collection and wagonloads of containers being pulled on the highway. At the Port of

Desperados (a fascinating name in itself) the first glimpse of the Sierra Nevadas in the distance is visible with snow-capped peaks; the land becomes rolling with hills covered with green grass in the Mediterranean spring and herds of cattle; gradually blending into planted mixed conifer forests.

Finally into Granada - a major international tourist city with both the Alhambra and nearby skiing in the snow-capped mountains. It seems much more crowded and commercial than my last visit 12 years ago - and a McDonalds (rare in Spain) now tempts one on the main street. Find a bizarre and very cheap room off the beaten track with a semi-private courtyard with untended potted plants and vines going wild all over the place. Through the various cities in the last several weeks Lenten celebrations, parades, and parties have been going on - and I encounter such a parade here in the evening which is lively and great fun. While wandering around the town after dark I decide to hike up to the Alhambra area so I'll know the route for my morning visit. Walking up the hill on the park ramps in the darkness brings back memories of the earlier visit (in daylight) years ago with the gushing water flowing in channels by the path - and also some fears that this seems a perfect place to be mugged in the darkness with no one around. When I get to the gate of the palace I'm surprised to find it open - so wander in and finally up to the ticket sales office where I discover to my astonishment that it is now open for evening visits. This does not seem to be announced in tourist literature, and must be virtually unknown as during the next hour while I go through the complex - there are perhaps less than a half dozen visitors encountered - of the thousands milling around the streets only blocks away.

The Alhambra at night is one of the highlights of the 5 months. It is considered a world heritage site - one of the finest existing examples of Islamic architecture and garden development - created over a 500 year period from the 9th to the 16th centuries. They have recently installed artificial moonlight lighting systems to softly illuminate the many courtyards - and strolling through them in isolation gives such a remarkable feeling of what it must have felt like to have lived here in centuries past with water trickling from fountains, the beautiful tile work, and the stillness of the night. I continue out into the gardens past where the lighting is installed - but there is enough real moonlight to make exploration possible. I find a giant *Cercis siliquastrum* perhaps 2'D and 40'H and collect seed for a future distribution thinking gardens or individuals might enjoy a plant grown from a parent in such a historic site. Finally back to the room with the adrenalin of the experience altered (perhaps enhanced) by discovering I could not remember the name of the street my pension was on. With considerable backtracking and winding I finally find it 45 minutes later.

Sunday - February 21, 1988. Granada - Cordoba. Back to the Alhambra for a daytime visit and photography - and back also to the reality of the modern world tourist industry. Although there early shortly after opening - on a Sunday and at a definite "off-season" time for tourists - the tour buses are jammed and herds of visitors fill the plazas, rooms, gift shops, and courtyards - what must it be like in the summer tourist season? Photography is virtually impossible in the courtyards (though still possible - it only took 30 minutes to get a good shot of the Court of the Lions) - luckily as one gets out of the buildings and further and further into the gardens the crowds do thin. Much restoration work is going on in the Generalife - the royal gardens near and above the Alhambra where the garden development is at its best - but it still is a magnificent spot to look down on the gardens below and to the Sierras in the distance.

Next goal for the day is to drive on to Cordoba. Although not far in distance on the map - it is a long, slow and tortuous route to drive with winding roads and corkscrew bends. But the scenery is beautiful with olives and oranges, mountaintop walled medieval towns, vast areas of treeless rolling hills with green grass and tilled fields - and more English Range Rover cars than I have ever seen anywhere else. As I pass by an enormous garbage dump/landfill with flocks of seagulls working the debris - I assume "civilization" must be nearby and over the next major hilltop the city of Cordoba comes into view in the valley below. Work my way into the old Islamic section of the city with tiny winding streets around the mosque I've come to see - park, find a small hotel with central courtyard, and settle in. It is Sunday and everything is closed making finding something to eat a challenge - but finally find a small take-out grill and get assorted items to go back to the hotel with.

Monday - February 22, 1988. Cordoba - Seville. In Cordoba for two garden visits. The Alcazar is a 14th Century building with a modern "Arab Style" garden - which turns out quite disappointing - low maintenance (weedy and falling apart) and nothing of particular note. The Court of the Orange Trees at the Mezquita (Mosque) is supposedly one of the oldest of existing walled gardens - originally begun in the 8th century. Historically interesting - and also the watering system with stone trenches to take flood irrigation to each individual plant. A short stay to do both sites - and then a drive on to Seville. The point of interest here is the Alcazar - a 14th century Mudejar palace with incredible Moorish features and outstanding gardens outside. In many ways I find it more impressive than the Alhambra - perhaps not so finely crafted, but far more extensive and elaborate in the building. The gardens are not immaculately maintained and have a feeling of decline to them (a "Secret Garden" air) - but give me the best feeling I've ever had on what the original Islamic gardens must have "felt" like at their peak. The gardens have the strong rectangular pattern with fountains at all intercrossing paths - a rich mix of the traditional plants - citrus, roses, etc. Beautiful tilework, citrus trees of lemons and oranges in full ripe fruit, and four *Jasminum* species in flower (*mesnyi*, *polyanthum*, *officinale*, and *fruticans*) make for a rich and enjoyed visit. Across the street is the Seville Cathedral - the third largest church in the world - but other than the impressive gold plated altarpiece four stories tall - somehow dark, gloomy and surprisingly unimpressive considering its huge size.

Tuesday - February 23, 1988. Two visits in the morning before leaving Seville - to Casa de Pilatos - a Renaissance mansion completed in the 16th Century with courtyard gardens. Somewhat of a disappointment after the glowing description of a travel guide. Strange mix of Arabic details on the building with Roman, Greek, and Italian sculpture throughout. A magnificent plant of *Jasminum mesnyi* climbing to the roof of the two story structure in full golden bloom. Also - looking at the garden does provide a new awareness for me. Have long

wondered what was traditionally used for the extensive evergreen hedging common in the Islamic gardens before the later introduction of Asian and American plants which one sees used almost universally today (*Euonymus*, *Arbor Vitae*, *Ligustrum*, etc.) - and here I note for the first time - citrus sheared in this fashion which is the obvious answer.

Then on to scout through the large (93 acres) Parque de Maria Luisa created in 1893 by the French landscape architect J. N. Forestier with a blend of French traditional formal layout and useage of Arabic garden details. Today a very heavily used urban park (the Central Park of Seville) - but rather overgrown and wild now from the original plantings. I was most impressed by a dramatic avenue of specimen *Magnolia grandiflora* (75'H) trees framing the Plaza of Spain at one end; and a grove of old *Cercis silaquastrum* about 35' tall - the first I've seen beginning to bloom on this trip. A third listing from my garden guide book - the Palacio de las Duenas - is not now available to tour for some reason. Upon leaving the city - see the site for the 1992 World's Fair which will be held here to commemorate the 500th Anniversary of Columbus's exploration to the Americas.

About a three-hour drive from Seville to Faro, Portugal - my first trip ever to this country. After driving around lost for awhile hunting for the bridge to cross a river inlet to get to Portugal - discover the only way there is by ferry and finally get across. Perhaps the country mood is set at the entrance - money cannot be changed for an hour as the town electricity is off and the bank computer cannot be used - a frequent daily occurrence apparently - which neither surprises nor upsets anyone except the tourists.

Wednesday - February 24, 1988. A travel - relocate day. Do the relatively short drive along the Algarve coast of Southern Portugal and observe the rapid development of this area. Since the entry of Portugal into the Common Market in 1986 - this area with a climate almost identical to San Diego, California has become a favorite spot of the English to retire and have first or second homes - much like Florida has been to northeastern U.S. residents. Miles of condominiums, water slide parks (the European Myrtle Beach of the future unquestionably), golf courses, time share apartments, hotels, etc. are totally erasing the Portugese culture, way of life, and agriculture of the area. See vast areas of temporary poly houses of varying kinds primarily for forcing of early strawberries for northern markets (picking now), early tomatoes, and carnations - with the traditional orchards of olives, oranges, and figs - but their days are most definitely numbered.

Destination for the day is Cape St. Vincent and the town of Sagres which have captured my imagination since reading about them in a tour book. The Cape is the southwestern-most point in Europe and in the Middle Ages it was considered "the end of the world" by mariners - a dramatic point of land with vertical cliffs hundreds of feet high which plunge into the Atlantic. It is also the most remote and least developed of the south coast which I hope will provide a good location to work awhile - and supposedly the cheapest place in Europe at the moment - something my battered budget badly needs. Upon arrival, the Cape is indeed incredibly beautiful, the town small and "relatively" undeveloped (for perhaps another 3-5 years till the coastal rush envelops it), and definitely cheap. Though one can rent a room in a private home for about \$5 - I've splurged and stay in a real hotel for the first time in weeks with a room which has light from windows, real carpet, a bath, heat, and fresh (non-mildewed) air - all firsts for some time (and likely the last with several months ahead in expensive Northern Europe) and still only \$12 including breakfast - with a spectacular view of the coastline and town harbor from a walkout private patio on the third floor. I may stay for weeks - what a magnificent place to write and how appropriate - "at the end of the world"! (Not to mention with some 3,600 miles already on the car in three weeks and with gas at \$4-5 per gallon in various countries - time to slow down a bit).

Thursday - February 25, 1988. In Sagres to write, but after a morning on the keyboard it is time to walk the countryside and look at the wildflowers I saw from the road yesterday. A wonderful hike of about a mile from the road across quite varied terrain - rocky cliff outcroppings to a shaded gully with a stream running through it - and finally to a dramatic cliff overlooking a beautiful and totally inaccessible bay below with crystal clear emerald water of the Atlantic. There is the excitement of seeing massive horticultural displays in gardens - and an equal excitement seeing the wild ancestors of those same plants in their native habitat even though scattered and less showy. My adrenalin was flowing as I encountered the first "wild" daffodil I've ever seen - *Narcissus bulbicodium*; quickly followed by an unknown species of Tulip (a brilliant yellow with 1.5" diameter flowers), a tiny bulbous Iris with blue flowers and a white eye on the falls, a *Fritillaria*, a pale lavender *Crocus* (?), two species of *Asphodelus* - all surrounded by a wide variety of other plants - extremely dense mounds of a spiny bush *Genista* covered with yellow flowers, masses of both Lavender and Rosemary in bloom, numerous species of *Cistus* (rock rose) with pink and white species in bloom, the palm - *Chamaerops humilis*, a *Cupressus* species and several oaks which are low shrubs here from the winds which sweep this exposed peninsula, and many different bulbs just emerging which must be amazing later - including the foliage of some unknown bulb by the millions. And at one point of the day - a single stalk of a beautiful tiny orchid with four flowers on a stem about 5 inches tall - with no more to be found. After a three-hour hike (stretching the one roll of film I carried to the limit!) and enough brilliant sunshine to give my forehead a tingle - it was time to retire to the room and computer for the rest of the day and evening. I do love this place!

February 26-29, 1988 Sagres. Days which pass too quickly with most of the day on the computer (i.e. - hours of cursing and pounding of the table and a little productive work!) - letters, the arboretum inventory, a new arboretum tour sheet, etc. Hikes along the cliffs - and watching the sunsets make for wonderful memories. Visit the Prince Henry fort where the early Portugese explorations of the seas beyond the Mediterranean were conceived and based - what courage and intense desire for new knowledge was exhibited by those generations. The season hotel rate change occurs on March 1, with more expensive prices so decide to move and head north on my way back to England to collect dormant plants and see how spring is beginning there.

Tuesday - March 1 - Sagres to Lisbon. Pack up and say goodbye to Sagres. Head north and very shortly the tree cover which had vanished on the windswept plains of the Cape St. Vincent returns. The dominant trees seen are the Italian pine, *Pinus pinea* with its typical round-topped head, the constant presence of cork oaks, *Quercus suber* (with piles of bark harvested for commercial cork production seen everywhere including on trucks on the road), and the more recently introduced *Eucalyptus* from Australia which is grown in plantations for coppicing (for fuel or lumber?). See numerous storks on nests on chimneys of churches and homes - a good luck symbol here as through much of Europe. Along the road the yellow flowers of *Spartium* and the white *Cytisus* add color - and the agriculture varies from ultramodern to a steady presence of wheelbarrows and cultivation with horses and oxen. In one district quite surprised to see vast areas of rice paddies - not an image my mind thinks of for "arid" Portugal. At San Torpez much commercial/industrial development - obviously the energy center of the country with coal, oil, gas, etc. power facilities scattered over a wide area.

Cross over a high bridge with a spectacular view of Lisbon ahead and to the right - with the realization of yet another gigantic complicated city to negotiate. Again my maps are inadequate with much winding and backtracking - but finally into the central business/hotel district of the city (which was mostly destroyed later in a massive August fire which consumed some 30 blocks of the old city center). In searching for the cheapest possible place to stay - here I found places so "basic" I didn't even make it above the second floor, let alone to check out the room, before I retreated in fear and repulsion. But eventually all worked out and adequate accommodations were found within one block of the huge main park/plaza (Parque Eduardo VII) which extends through the best section of Lisbon, up a long hill to a view point overlooking the city and harbor. Although I'm a movie addict normally needing to see everything that comes through town - in Europe for some reason (\$) this urge departed with only two films attended in the 5 months - one here in Lisbon to see the blockbuster 'The Last Emperor' (magnificent with many memories of the Imperial Palace in Beijing). Even a familiar scene such as going to a movie differs in other cultures - strange to have assigned seats as in a theatre with ushers taking you to a seat; the ability to buy mixed drinks and sandwiches at the refreshment bar - but not popcorn (A CRISIS!), and the choking fog of a macho society not yet into the public health smoking bans now familiar here.

Wednesday - March 2 - Lisbon. A day of walking to discover Lisbon is a city of beauty with much to see and do - actually becoming one of the favorite cities of the trip to my great surprise. At the west side of the Parque Eduardo VII is a pair of enclosed structures which creates one of the most impressive interior displays of plants I have ever encountered. Although tropicals are not of particular interest to me - this display was outstanding in its scale and excellent state of maintenance. The oldest structure is the Estufa Fria (the cool greenhouse) which was first built in 1910 on the site of an old quarry, later enlarged in 1926, and finally opened to the public in 1930. It is covered with a light fabric which does little for temperature control but frames the collection. Adjacent to it and continuous to the point they blend together is the Estufa Quente (the hot greenhouse) which has a glass roof and temperatures maintained high enough in the the colder months of the year to grow true tropicals. Both structures must cover an open area of perhaps four acres with the feeling of lush tropical luxuriance with pools, paths, tree ferns, palms, etc. Unfortunately, there are few plant labels to guide someone interested in the details of the collection, but it is a beautiful horticultural display area.

Nearby is a 10 acre botanical garden of the science faculty of the Escola Politecnica which was founded in 1874.

Enclosed in a high stone wall with only a single entrance located off a side alley - it is certainly not on a tourist circuit and not terribly easy to find. I'm not expecting much - and although there obviously is little budget or University support for the garden - I am pleasantly surprised by a very wide array of plants with many large specimens of unusual species. Among some of the treats: the biggest *Mahonia* I've ever seen (no name of course) 20'H; *Podocarpus totara* (20"D, 55'H); *Sequoia sempervirens* (3'D, 65'H); *Cryptomeria japonica* 'Elegans' (1'D, 25'H); *Phillyrea latifolia* (18"D,30'H); *Ehretia ovalifolia* (China - 2'D,40'H); *Myrica faya* (Azores - 1'D, 20'H); *Quercus libani* (3.5'D, 60'H); *Mallotus japonica* (15"D, 20'H); *Yucca elephantites* (40'H); *Taxodium mucronatum* (4.5'D, 75'H); *Dracaena draco* (15'H, 35'W), *Cercis siliquastrum* (2'D, 35'H); and avenues of old *Washingtonia* fan palms and Canary Island date palms. I'm intrigued by a Mexican mockorange I've not heard of before - *Philadelphus glabripetalus*. Old wooden buildings in the garden are interesting, others with tile roofs with glass tiles to let in light, an old weather station, bamboo groves, and a huge old banyan tree are interesting to study. Am excited when I see the same *Dasyliirion* which we have in the NCSU Arboretum (now the JC Raulston Arboretum) and dash to it eager to finally get a correct name - and their plant is also unlabeled - so it goes.

As I head back to the hotel after a long day of walking - with aching feet and tired legs - I am astonished to suddenly experience snow falling around me although it is not particularly cold at all. In this mild sub-tropical climate snow very rarely occurs - and the local people on the street are as amazed as I am - with everyone stopping, pointing up, laughing, talking to each other, etc. A minor miracle on a most enjoyable day.

Thursday - March 3 - Sintra. A circle trip west from Lisbon to Derras to see the Columbus memorial; and nearby a little-known or visited, but historically important garden - the Jardim do Ultramar (Overseas Tropical Garden). In this garden many plants were first grown in Europe from the various journeys made to Africa and Tropical Americas by the early Portugese explorers. Today in sad decline with obviously little money or staff - but interesting remnants still exist. Most interesting are stunning and noble head sculptures of Africans on gate posts at various places in the garden - which are weathering and deteriorating and badly need preservation.

Then on to the Atlantic coast and beaches which are heavily developed and a major factor in the tourist economy of the area - north to Cabo de Roca - the westernmost point of land on the European continent - today deserted with a spectacular view north up a rugged coast with high dramatic cliffs from the lighthouse. Drive inland a short distance to the mountain area of Sintra - historically a summer

retreat for the wealthy of Lisbon (about 10 miles away) to escape hot temperatures at a higher elevation. In the 1800's it became an important stop on the English Grand Tour of Europe and many elaborate hotels and Victorian mansions were erected with elaborate gardens. Though decaying a bit from former glory - it is still an interesting community and several gardens are open to the public.

Above the town of Sintra is Pena Palace which was built in in the 1840's and occupies an entire mountain peak and surrounding slopes. The palace is fascinating to go through - but most interesting from a horticultural standpoint are the exotic forests which were created. In the 1800's Europeans were intensely interested in exotic trees being brought back from all over the world and in the concepts of scientific forestry to manage wood production and creation of artificial forests. There are many hiking trails over the rugged mountain and one will come across groves or large areas of everything from California redwoods to Australian eucalyptus as well as scattered individual specimens of many species. Nothing is labeled (disasterous for a non-taxonomist like me) but an interesting "exotic wilderness" experience.

Nearby a visit to the Monserrate estate which my guidebook had led me to with the comment "covering 75 acres, the plantings of sub-tropical trees are unparalleled in Europe. Conifers, especially from the southern hemisphere are well represented. . . . in the moist, nearly frost-free climate Norfolk Island Pines grow to a height of 120'."

A house was built in the early 1800's, later destroyed and rebuilt as a wild Moorish fantasy in 1856-60. Today the house is abandoned, and the entire property is in sad decline. The mountainside of paths, fountains, streams, bogs, and plant collections contains many marvelous things - but one must work to experience it by pressing through overgrown paths and digging through underbrush to discover treasures over the property. Examples - a 150' Banyan (*Ficus*) tree with aerial root/trunks, 30' fastigate yews, 80' Southern Magnolias, a 45' *Chamaecyparis pisifera*. Such a pity (as at the Hanbury Botanical Gardens mentioned earlier) that so much effort (continual ties with Kew Gardens and import of rare plants from all over the world for some 80 years) - should today be allowed to deteriorate so badly. With a small staff of interested and dedicated horticulturists and relatively little money it could be the finest garden in the country - and it would seem the heavy tourist industry of the area (particularly since so much of it comes from England with great garden interest) could nearly support it. But obviously not to be - very sad.

I had wanted to stop at an elaborate formal French garden at the Rococo Palace of Quelus (a summer palace built in 1758) on the way back to Lisbon - but time does not permit. Photos and postcards indicate it would be an excellent visit for anyone in the area as probably the best maintained public landscape garden in the country.

Friday - March 4 - Lisbon to Oporto. Again on the road north - first to the town of Coimbra - a university town equivalent to Harvard or Oxford for Portugal with the brightest and most influential families children receiving their education here for many generations. The University of Coimbra Botanical Garden is Portugal's largest and oldest botanical garden - covering approximately 50 acres and founded in 1774. There are six terraces or levels with formal French layout through much of the garden. The most interesting feature to me is the mix of sub-tropical plants such as oleander, Banyan trees and Norfolk Island pines with a superb collection of specimen temperate zone conifers of great age and size: *Sequoia sempervirens* (6'D, 40'H), *Cryptomeria japonica* (2'D, 70'H), *Pseudotsuga douglasii* (28'H), *Picea smithiana* (45'H, 30'W), *Abies concolor* (70'H), and *Thujaopsis dolobrata* (20'H). There are many 30' *Acer palmatum* with 18" trunks - and good old N. C. sweet gums trees (loaded with gum balls).

Then on north again for about 40 miles to Bussaco - a most fascinating forest (Tapada de Bucaco) which originated as a monastery preserve. Carmelite monks settled here in 1268 and developed a religious retreat of which meditation cells still remain in the woods. In 1643 Pope Urban VIII published a Papal Bull containing the threat of excommunication to anyone who entered and cut or caused damage to the trees on the mountainsides. Among the oldest exotic trees are *Cupressus lusitanica* planted in 1644 from seeds sent from Mexico by monks there to be used for fuel and cabinetmaking. These 340 year old trees are now over 100' in height. In the 1770's extensive planting of exotic species was done by the monks and with continued preservation to the present (now extending over several thousand acres) - it represents a magnificent collection of superb trees. There are huge specimens of *Platanus acerifolia*, *Pinus montezumae*, *Pinus pinaster*, *Quercus ilex* and *lusitanica*, 70' specimens of both *Picea smithiana* and *breweriana*, and dozens of other outstanding varieties. Today there is an elaborate old hotel at the center of the park with formal gardens including an elaborate parterre around it - and two of the most fascinating plants seen in Bussaco - perhaps the largest N.C. southern longleaf pine, *Pinus palustris*, I've seen (4'D, 80'H), and a stunning and magnificent specimen of the weeping elm, *Ulmus glabra* 'Pendula', grown on a support frame and now 15'T and 40'W.

Again on the road with a goal of the area of Oporto for the night - Portugal's second largest city and noted for the Port wine produced in the area. I'm hunting specifically for a garden long on my list - the Conde de Campo Bello garden which contains the oldest *Camellia japonica* specimens outside of Japan. Three plants were imported in the mid-16th century and are now considered the largest in Europe with trunks nearly 3' in diameter and some 30' in height. When I arrive I have no luck in finding any information source and wind around the city lost in extremely confusing traffic for a long time. As evening approaches I finally give up and finally locate a hotel to stay in for the night with plans for continued hunting tomorrow.

Saturday - March 5 - Oporto to Spain. After worrying about the threat of break-ins and robbery for the last three weeks that many people have told me are a constant problem in Spain and Portugal - my luck finally runs out and I exit my hotel in the morning to find the car window smashed out by a very stupid potential thief. The car was parked under a bright street light, with all the interior compartments opened to show there was absolutely nothing in the car to steal had anyone bothered to look. Likely, he went after the radio - but failed to note the car had none! So a morning of hassels with police (who only speak Portugese and French) and insurance claims begins - when that is all over I learn that the auto dealers are of course closed for the weekend and nothing can be done to repair the damage

until Monday. (Not all is lost - there was a fine planting of deciduous magnolias in full bloom at the front of the police station which I certainly would never have seen had the thief not "helped" me). After this experience I have absolutely no desire to have anything else to do with Oporto - and decide it is time to truly leave and sprint north to France where it should be easier to get a French car repaired. So much for the giant camellias I came to see!

Good plan - but unfortunately it involves about 500 miles of driving over two days with an open window (in rain much of the way, and in snow over the mountains of northern Spain - with a towel wrapped around my head for the cold) until I get to Bordeaux, France where I finally get the window repaired on Monday. The main point of horticultural interest on the drive is an area near Salamanca, Spain where miles of very beautiful groves of evergreen oaks exist in green grass, estate-like pastures where apparently truffles are cultivated on the oak roots (and found by trained pigs who sniff them out for harvest).

Monday - March 7 - Biarritz to Nantes, France. After the car is repaired - hunt up the Bordeaux Botanical Garden in the center of the city. A small garden of perhaps 4-5 acres founded in 1859 and adjoining a city park which has many fine old specimens of American tree species (bald cypress, Southern magnolia, tulip tree, redwoods, etc.). Some things noted: *Pterocarya caucasica* (15"D, 24'H), *Alnus glutinosa* (2'D, 65'H), *Juglans sieboldiana* (Japan - 3'D, 65'H), *Pinus griffithii* (30"D, 75'H), and *Ginkgo biloba* (40"D, 80'H). Some of the more interesting odds and ends: 8 species of *Cyclamen* on display with *C. coum* in bloom; *Stranvaesia glaucescens* from the Himalayas new to me; the first *Cercis canadensis* I've seen on this trip; and most exciting - a plant of *Poliathyrsis sinensis* (5"D, 24'H) which I have long wanted for the arboretum - with seed on it (out of reach of course).

Tuesday - March 8 - Nantes to Channel. One last planned stop on my push to England in Nantes to see the Botanical Garden created in 1850 and today covering 17 acres. The guide book indicates the garden is particularly noted for its magnolias and camellias which I estimate should be at peak bloom - and indeed are. Two opposite sides of the walled garden are lined with massive plantings of hundreds of cultivars of camellias - the largest collection I have seen and showing the great diversity of this genus. Among the more interesting plants here - probably the largest (longest) specimen I've seen of *Cedrus atlantica* 'Glaucopendula' - trained on a wire from one bed over a pathway and across another bed - about 60' of horizontal distance; *Quercus macrocarpa* (30"D, 60'H), a variegated elm new to me - *Ulmus procera* 'Argenteo-variegata'; many fine *Pieris* in full bloom; *Sophora krolei* (new to me and not in any of my references? - 15"D, 25'H); and probably the finest specimen I've ever seen of the U.S. west coast tree, *Umbellularia californica* (20"D, 30'H, 30'W).

As I head on north and go through the city of Rennes, I discover the Jardin du Thabor created in 1610 and today covering 25 acres - and make an unplanned stop. Many magnificent tree specimens and there is an unusual plant families section of the botanical garden arranged in concentric circles which contains some 3,000 species. It is interesting to see how tree species are presented in the families area where little space exists for an individual plant - by the use of heavy pollarding (which the French love and practice on urban trees anyway) which gives a row of trees looking like fence posts at this time of year - and yet allows a view of the foliage, etc. for study during the growing season on annual shoots. Magnolias are in full bloom with showy displays by *M. denudata* (24'H) and *soulangeana* 'Lennei' (18"D, 24'H, 35'W); and such other treats as *Calocedrus decurrens* 'Variegata' (mentioned earlier - 24'H), *Cedrus atlantica* 'Glaucopendula' (5'D, 65'H), *Cupressus glabra* (3'D, 70'H), and 100' redwoods.

While in town (doing laundry at a shopping center) I encountered a fascinating bit of horticultural exotica. French attitudes toward the erotic side of life differ greatly from the Puritanism of America and some of the billboards and other public media there (which are ho-hum and unnoticed by the French) would probably cause shock and demonstrations if encountered here in N.C. A comedy farce movie entitled "The Pleasures of the Seasons" is showing at the shopping center theatre with a huge billboard outside - and in it a variety of horticultural plants are used to represent the four seasons of the year - in extremely graphic erotic context. Fun photos - which unfortunately will never make it to my public lectures!

North of Rennes in the last few miles to the coast port of St. Malo where I catch a ferry to England the next day, there is increasing evidence of the devastating storm which hit England last October (of which we will repeatedly comment on in the next newsletter) - much worse damage than I had expected in France - and near the coast entire populations of trees have been flattened. Arrive too late to catch the ferry and will spend the night here - and go on a huge splurge and stay in a motel with a TV after a 5 week void of this evil addictive visual drug. Can get English BBC reception here across the channel and I revel in the great pleasure of one of the superb English documentaries on post-modern architectural developments in Berlin (typical type of U.S. evening coverage, of course). Next the issue of the newsletter (#19) we continue with early spring in England.

1988 NCSU Arboretum (now the JC Raulston Arboretum) PLANT DISTRIBUTION

NCAN Short Course and Trade Fair - Asheville, NC - August 14-16

(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 on plants distributed at the 1988 meeting. 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 commercial production. This program has been under way since 1980 and ca. 36,000 plants of 180 different species and cultivars have been given to growers since its inception. Selection of plants is based on plant ability to be propagated when the Department of Horticulture propagation benches are empty, size of stock plants in the arboretum adequate to allow taking of 200-300 cuttings, and absence in the existing commercial industry. Plants will vary in commercial potential with some having great potential - others merely curiosities or hobbyist collector-type items.

These plants provided for growers represent just a sample of the 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 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.

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

The numbers on the tags attached to each plant refer to the identification number in the listing to follow.

1. *Abelia chinensis* - Chinese Abelia (Caprifoliaceae). This plant is not in commercial trade and is most noted as being one of the parents in the hybridization (*A. chinensis* X *uniflora*) which created the widely popular *Abelia* X *grandiflora* (introduced in 1886 from Italy) now seen throughout the southern U. S. The species was introduced to cultivation from China in 1844 and is a deciduous shrub reaching 6' in height with masses of highly fragrant white, rose tinted flowers from July until frost. As flowers continue to be produced by the growing point - the dried inflorescences of older flowers increases in length and are held on the plant through the winter for ornamental value. Butterflies are attracted to the plant as strongly as to *Buddleia*. Although deciduous shrubs are less prized in the south than the massively used broadleaved evergreens - this plant has merit for use with the long bloom season and fragrance it will add to a garden. Hardiness of Chinese Abelia is debated in various references - with citations of zone 5 to 8 probably depending on amount of summer heat received to ripen wood. It came through our record low of -7F in 1985 with no injury and should grow well throughout N. C. It is most floriferous in full sun but can be grown in partial shade. Softwood cuttings root very easily and quickly in summer. Our parent plant is in the farthest west bed of the arboretum in the *Abelia* collection and ample cutting wood is available if anyone desires quantities to try production.

2. *Achillea tomentosa* - Dwarf Yarrow (Compositae). This plant has been a most attractive evergreen groundcover in full sun in our trials with the foliage mass of finely divided tiny leaves reaching about one inch in height. In early summer, inflorescences about 2-3" in height provide a carpet of bright yellow flowers. A tough hardy plant which can be grown throughout N. C. - but will perform best if given full sun and good drainage to prevent summer crown disease within the very dense mats of leaves. Easily propagated at most any time of year by digging and dividing the crowns to smaller pieces. One reference has suggested its use as a "turf lawn" in areas with light foot traffic - requiring mowing following the flowering period. Our display bed is in the paving materials and sun groundcovers plaza. It is readily available in the national commercial perennial plant market.

3. *Betula jacquemontii* - White Barked Himalayan Birch (Betulaceae). This beautiful tree introduced to western cultivation from the Himalayan mountains in 1880 is often considered as having the most beautiful bark of any birch species. Hardy to zone 6 but rarely seen in cultivation in the U.S. - now beginning to achieve some popularity in the Pacific Northwest. With its geographic origin - it would not be expected to do well in the heat of the southeastern U.S. but our early trials have been remarkably promising and we feel it should be tested more widely throughout the state. In the raised bark beds of the arboretum display lathhouse, it reached a height of 15' in three years from a quart liner; and early growth of two plants now planted out in the arboretum seem not far off that speed. The white bark appears in the second year. Our oldest plant is now 6 years of age, 25' in height with a 7" trunk and so far no sign of borer infestation has been observed. Borers, the major limitation with most birches, usually attack stressed plants and perhaps as plants age and slow growth this may occur.

Softwood cuttings have rooted readily in summer with 90%+ success. For best commercial success, one should probably take cuttings here in July, root under mist in deep flats with a #1-2 Hormodin equivalent, and overwinter them outdoors without root disturbance until after new growth begins the following spring - at which time they can be potted (similar to *Acer*, *Hamamelis*, *Stewartia*, etc.). Poorly drained soils in the heat of the south may provide extra stress for the root system. This spring we tested grafting of scions on rootstock of *B. nigra*, the common southern river birch which is a floodplain species tolerant of most any heavy or wet soil situation. The cleft grafts (side-veneer would probably be best for commercial use) all took easily and have already produced 3-4' of growth in the nursery. As the top of the plant seems completely heat tolerant - this grafting procedure onto river birch rootstock may enable the Himalayan Birch to be used further south or in more marginal situations than the species itself could tolerate. Much testing is needed - but the exceptional beauty of this species warrants such experimentation. Our largest tree is in the display lath house with a younger one in the magnolia area of the east arboretum. Large quantities of cuttings or scion wood are available upon request.

4. *Buddleia davidii* 'Harlequin' - Harlequin Butterfly Bush (Loganiaceae). The butterfly bushes are quite common in the nursery/landscape industry as tough, easy deciduous flowering shrubs with a long bloom season through the summer. There are dozens of cultivars with flowers of white, orange, pink, lilac, and purple. Hardy to zone 5 and adapted for use anywhere in N. C. A shrub reaching 6-10' in height; but can be sheared to the ground and treated as a herbaceous perennial with flowers produced on new growth. This cultivar is the only one with white variegated foliage - which contrasts nicely with the dark reddish-purple flowers and provides foliage interest even when the plant is not blooming. The cultivar arose as a sport of 'Royal Red' in England before 1964. Our source for the plants being distributed was a single cutting brought from the magnificent Tromphenburg Arboretum in Rotterdam, Holland in September 1987.

Leafy cuttings root quickly and easily any time the plant is in growth. By keeping the original cutting and its offspring under long day conditions in the greenhouse - growth continued all winter for rapid build up in numbers. One could likely go from one cutting to several thousand plants in a year if propagation were pushed to the maximum. Not at tissue culture levels, but not bad for traditional low tech methods. Could be introduced to commercial sales very quickly if desired. All plants in the nursery at present - but will be planted in several places in the arboretum this fall.

5. *Buxus sempervirens* 'Fastigata' - Columnar Boxwood (Buxaceae). An uncommon cultivar of this broadleaved evergreen shrub long popular for landscaping in the southeastern U.S. Much more rapid growing than most forms; or at least in increase in height with a foot of growth per year. Our parent plant is tightly columnar with thickness of about 20" in diameter on a tapering plant 6' in height. It has potential for use as an excellent hedging material if planted about 15-24" apart in line. It could serve the function of a sheared 3-5' tall barrier hedge in inner city urban areas with small lots where its narrow width, tolerance of sun or shade, and traditional look would be appropriate. Cuttings can easily be rooted year-round under mist and young plants grow off rapidly. We have several plants - two in the boxwood section of the Southall Garden northwest of the farm classroom building; and in front of Kilgore Hall on campus near the large *Magnolia grandiflora*.

6. *Chamaecyparis obtusa* 'Chabo Yadori' - Chabo Yadori *Chamaecyparis* (Cupressaceae). A novelty, soft textured conical conifer with characteristic of having unstable growth which mutates often and results in 3 to 5 quite distinct foliage shapes and textures on the same plant. It is a classic plant to show students in plant propagation to discuss bud sport mutations and the importance of careful clonal selection when taking cuttings. In various catalogs it may be listed under either *C. obtusa* or *pisifera* - the former being used here as the way it is shown and listed on p. 101 of *Conifers* by D. M. van Gelderen and J. R. P. van Hoey Smith. Though an attractive and technically interesting plant - it probably has little commercial potential for mass marketing or commercial landscapes - it is hard enough to explain simple plants to new audiences, let alone anything this complex and variable. Easily propagated under mist either in summer or winter - careful cutting selection is essential to maintain the cultivar! Our plant is in the conifer section east of the row of dwarf loblolly pines - just opposite the large sycamore in the east arboretum.

7. *Chamaecyparis pisifera* 'Plumosa Aurea' - Golden Plume Sawara Cypress (Cupressaceae). A vigorous growing conifer with bright yellow foliage which will grow to 25' or more in height with time. This is among the best of conifers in the arboretum for retention of a bright yellow foliage color during the heat of the summer (also including *Chamaecyparis obtusa* 'Crippsii', *Thuja occidentalis* 'Sudworth Gold', and *Chamaecyparis pisifera* 'Filifera Aurea'). The cultivar was introduced from Japan in 1861 by Robert Fortune. Easily propagated by cuttings in summer or winter under mist and grows 12-18" per year as a young plant. Can be sheared for hedging. Our plant is 7' in height with large amounts of cutting wood available for anyone interested in growing it - located in the southwest section of the arboretum near the *Juniperus scopulorum* cultivars.

8. *Cryptomeria japonica* 'Vilmoriniana' - Dwarf Japanese Cedar (Taxodiaceae). A densely branched, very slow growing form of the Japanese Cedar introduced from Japan in 1890 by the French nurseryman Vilmorin. Strangely, Krussman states that the cultivar supposedly no longer exists in culture in Japan. Of the numerous and quite varied dwarf cultivars of this species, this one is probably the most compact and dense, making a tight round plant which slowly increases in size. One of our plants in full sun is now 1' tall and wide after ten years of growth; another in partial shade has grown faster and is nearly 2' tall. Like most Japanese Cedars, winter sun and wind during very cold periods can create moisture stress with resulting foliage sun scorch. Plants are best sited where they can receive winter shade on the south side of the plant - particularly as one moves westward in the state with more severe winter temperature possible. The plant should be hardy anywhere in the state. Propagation is easy, though slow, with cuttings either in summer or winter under mist with a medium level hormone treatment. Likely not a profitable commercial plant due to the slow growth - but a good collector specimen. Our plant is located on the west side of the row of dwarf loblolly pines in the east arboretum.

9. *Distylium myricoides* - No Common Name (Hamamelidaceae). A species so rare in cultivation I can find no literature reference to it in my library collection. The New York Botanical Garden Encyclopedia of Horticulture states "only one of the six or more species of this relative of the witch-hazels is cultivated (*D. racemosum*), and that more as a curiosity than as an ornamental." Bean says of the same species "it belongs to the curious rather than the beautiful class of shrubs." *D. myricoides* is not listed in the flora of either Japan or Korea so it must come from either China or the Himalayas on the Asian mainland. Our plant has been through the last four years with no problems and with its broadleaved evergreen foliage - to me fills the category of "another green blob" - a category immensely important in the nursery/landscape business. It is being distributed as a rare novelty with the hopes of getting information about adaptation on this totally unknown plant - and particularly its hardiness as one goes west in the state. It has rooted easily from cuttings in summer or winter. Our plant was recently moved from the display lath house and pruned back from 7' to 4' in size - it is now located at the east end of the perennial border on the north side of the 'Nellie Stevens' holly hedge at that point.

10. *Hibiscus syriacus* 'Purpureus Variegatus' - Variegated Rose of Sharon (Malvaceae). Like the 'Harlequin' butterfly bush described above; this plant is not in commercial trade and is one of only two variegated forms of a Chinese species widely grown and used in the southeastern U. S. nursery industry. It was obtained by us as 'Meehanii' - and has been distributed to various individuals under that name in the last several years. In preparing this handout to accompany the NCAN distribution - I found in the authoritative Manual of Cultivated Broad-Leaved Trees & Shrubs by Gerd Krussmann that 'Meehanii' has yellow margined leaves and single lavender-blue flowers - and the true identity of the plant we have is the one listed above which has white variegated leaves and densely double lilac-red flowers (which exist like buttons and never open - the plant is grown only for its brightly colored foliage). (The New York Botanical Garden Encyclopedia of Horticulture lists it as 'Variegatus' and shows a photograph on p. 1675, Vol. 5). Hardy to zone 5 and useful anywhere in N. C. - best in sun though it will grow in light shade. Very easy and fast from summer cuttings under mist; and would likely root from hardwood cuttings in winter as well. Our plant is in the west arboretum at the west end of the walkway with the *Juniperus horizontalis* collection - near the large oak with the swing. Our young plant has little cutting wood now after having 250 cuttings removed in July - but will quickly recover and more can be available next year.

11. *Hydrangea paniculata* 'Tardiva' - Late Flowering Panicle Hydrangea (Hydrangeaceae). An uncommon cultivar of a once widely planted Japanese/Chinese deciduous shrub which has as its distinguishing characteristic very late flowering - in September/October in Raleigh compared to July/August for other cultivars. (We also have 'Praecox' - which blooms earlier than the species in late June). Apparently this cultivar originated in the mid-west around or in Chicago in the 1960's or early 1970's and is slowly moving into the industry through hobbyists and individual nurseries. Will reach 8-15' in height and is best in full sun, though OK in light shade. (Of the species itself - Dirr states under Landscape Value: "Monstrosity in the Landscape", "Extreme coarseness", "Totally disgusting", and "Possibly should be reserved for . . . the neighbor's yard".) But it is easy and fast and this cultivar provides garden interest when little else is happening - perhaps best as a park or highways plant where space is available and the ability to tolerate lack of care is a plus. One of those plants which "roots in the plastic bag on the drive home" - very fast under mist in summer. Our plant located in the east arboretum in the north bed - between the large *Zelkova* and *Sophora*. Large quantities of cutting wood now available; will be cut to the ground this winter to rejuvenate.

12. *Ilex crenata* 'Yellow Fruited Clone' - "Yellow" Berried Japanese Holly (Aguifoliaceae). With over 380 named cultivars of Japanese Holly in existence - perhaps there are a few too many types for realistic nursery production and use of all of them - though one can certainly select about any combination of size, leaf and plant shape, color, etc. desired from all the possibilities. This cultivar is not listed in any of my standard reference sources and came to us without a specific cultivar name though it is likely one exists. It was selected for distribution here as one of the limitations of this species is the black fruit which generally do not show up well in the landscape - Japanese holly becomes a year-round green mound. The fruit are not truly yellow - more a pale lime-green in color - but do stand out distinctly against the foliage and are noted by visitors to the arboretum. At least one nursery has gotten cuttings from us and is now growing and selling it in N.C. (plants seen at a booth at the January trade show in Winston-Salem). It has smaller leaves than most cultivars seen in production and forms a round bush probably reaching 5-8' in diameter with age if unsheared. As with all Japanese hollies - extremely easy to propagate at virtually any time of year. Our plant is located on the right side of the path as one leaves the entrance "White Garden". Large quantities of cuttings are available.

14. *Itea ilicifolia* - Hollyleaf Sweetspire (Iteaceae, Saxifragaceae, or Escalloniaceae in various sources). A beautiful broadleaved evergreen shrub introduced from China in 1895 and grown in limited quantities in landscapes in California - rarely, if ever, seen in the southeastern U.S. where it is likely adapted for use. Krussman lists it as a zone 9 plant, but the Sunset Western Garden Book gives it zones 4-24 in their 24 zone system - meaning it will have possibility for use in the Piedmont and Coastal areas. (Growers receiving them in the western part of the state could try them as tubbed house plants for patio use in summer). A graceful, open, arching shrub reaching 6-10' with attractive greenish white "chains" of flowers up to a foot in length. Cited as blooming in the fall in California but ours bloomed in July in the arboretum this year. The dark, glossy leaves are beautiful with thick leathery texture and spiny toothed margins. Will be best adapted in an area with light shade and moisture, and protection from winter winds and sun. Our plants were grown from seed received from the Nanjing Botanical Garden in China and in container culture reached 4' in height in a year. They have proven easy to propagate from stem cuttings. We have plants in 6 areas of the arboretum to test various habitat adaptation - the easiest to find would be in the display lath house in the *Itea* collection where we also have *I. chinensis*, *oldhamii*, and *yunnanensis*.

15. *Jasminum beesianum* - Pink Flowering Jasmine (Oleaceae). This is the only pink/red flowered jasmine species among nearly 200 temperate and tropical species. It was introduced to cultivation from China in 1910 and is very rarely seen in cultivation in the U.S. (Fairly commonly seen in the southeastern U. S. is *J. X stephanense* which resulted from a cross of *beesianum* with *officinale* - the only hybrid jasmine and also with pale pink flowers). The flowers are small and never showy - appearing sporadically through much of the year here - and in our heat they fade from the red seen in England to a pale pink in our summer. The plant grows as a viney shrub (or shrubby vine) with thin twining stems - and has potential use as a medium height groundcover reaching 2-3' in height. Looking at it in the arboretum, it would seem a good candidate for planting on banks. (Hilliers lists it in the vine section and says it will climb to 10'). Krussman cites it as being a zone 8-9 plant but our experience has shown it likely much hardier than that with the heat of the south to ripen the wood. It will likely be fully evergreen in coastal areas; semi-evergreen in colder winters in the Piedmont; and possibly have use as a herbaceous perennial with shoot regrowth from roots in the Mountains - testing is needed to see. Very easy from cuttings at most any time of year. Two plants are in the arboretum - one in the Jasmine section in the southeast corner; and one in the west arboretum in the deciduous holly section after leaving the Japanese garden. Large amounts of cutting wood are available.

16. *Kadsura japonica* 'Chirimen' - Variegated Kadsura Vine (Schisandraceae or Magnoliaceae depending on source). A genus of about 22 evergreen, climbing vines from sub-tropic and temperate southeastern Asia from Java to Korea. This species is native to Japan and Korea and was introduced to western cultivation in 1846. We have three Japanese cultivars which were introduced by Brookside Gardens for evaluation. The one being distributed has light white variegated "striping" on the dark green leaves. 'Fukurin' is more dramatic with a bold whitish/yellow border around the leaf edge and a green center; and the third is a white-fruited (red is normal) cultivar with solid dark, green leaves. Again, hardiness is debated but will probably be zone 7-8 here (Krussman says 9). Will be an addition to the list of evergreen vines for screening or shade; and could also be used for large scale groundcover use. It also has very good potential for use as an interior plant perhaps as a totem or hanging basket. Very easy from cuttings at most any time of year. Our two variegated cultivars have recently been moved and are growing up wires on the arbor as one exits the visitor center to the white garden. The solid green form is under the large holly trees north of the lath house.

17. *Lagerstroemia indica* 'World's Fair' - World's Fair Crapemyrtle (Lythraceae). (NOTE TO ANY RECEIPIENTS OF THIS PLANT - OUR WORST DISTRIBUTION PROBLEM OF THE LAST 9 YEARS OF THIS PROGRAM - AFTER THE NCAN MEETING WE DISCOVERED THIS CULTIVAR WAS MISNAMED IN OUR COLLECTION - IT SHOULD BE DISCARDED OR REMOVE THE NAME 'WORLD'S FAIR' FROM THE PLANT - IT'S TRUE NAME IS UNKNOWN!! - WE ARE VERY UPSET AND SORRY FOR THIS ERROR!!!). Crapemyrtles are among the best of deciduous flowering shrubs for use in southeastern landscapes and new varieties are being named and distributed at an alarming rate. Each year we normally include one in our distribution to show some of the new or different types. (Previous cultivars have included 'Basham's Party Pink' - for fast growth, 'Dallas Red' - for good hardiness shown in 1985, 'Near East' - for exceptional long bloom period, and 'Tuscarora' - a fine U. S. National Arboretum hybrid). This plant is the first of the so-called "dwarf" cultivars to be included in our list. Developed in Louisiana and released in honor of the New Orleans World's Fair. (NOTE - this is a patented variety and contractual agreements must be signed to propagate and sell this plant) After two years our plant is about 18" tall and 3' wide - and covered with pale lavender-purple flowers. Like the crapemyrtlettes (grown from seed) they should likely be called slow growing rather than dwarf (we had a crapemyrtlette 12' tall in the arboretum after 15 years!) - and will probably slowly grow to 4-6' in height. It would be interesting to see these crapemyrtles used as mass groundcovers which could be mowed back to the ground each year and treated as herbaceous perennials - interplanted with *Vinca major* or *minor*, or *Hedera helix* to give winter cover when pruned down - and with daffodils for a spring feature. Very easy to propagate from summer softwood or winter hardwood cuttings. Our plants are in the east arboretum - to the right of the main crapemyrtle collection in front of the needle palm.

18. *Ligustrum japonicum* 'Korea Dwarf' - Dwarf Japanese Privet (Oleaceae). This broadleaved evergreen shrub species was introduced to cultivation from Japan by Siebold in 1845 and until recent years was one of the most widely planted broadleaved evergreen shrubs in the southeastern U. S. Overplanting has made it less desired in the last decade (Dirr - "a green meatball"), and the large scale of the plant near homes and in hedges meant frequent shearing necessary to keep it to desired size in the landscape. During the 1985 U. S. National Arboretum expedition to South Korea - we found a population of genetically dwarf plants on Taehuksan Island off the south coast which have promise for providing a smaller "meat ball" with less shearing necessary. The foliage and growth rate are half to a third of normal for the species. Though not considered a "quality" plant in the nursery industry - it is still a good functional workhorse "bread-and-butter" item and this dwarf form should have potential for commercial use. Very easy from cuttings at any time of year. Our plants are located at the front of the farm in the Southall Garden along the chainlink fence behind the large white oak.

19. *Phellodendron amurense* - Amur Corktree (Rutaceae). A deciduous shade tree native to Japan, Korea, China, and Russia which was introduced to western cultivation in 1885. In spite of excellent growth in the south and numerous quality values (Dirr - "a tree of great beauty, transplants readily, does well on many types of soils, withstands acid or alkaline conditions, drought and polluted air; unusually free of pests") - it is not produced or used in the nursery/landscape industry of this region. Trees have grown rapidly in the arboretum with 3-5' of growth per year when young and have quickly made handsome specimens. It is well adapted for use anywhere in N. C. and makes a spreading tree reaching 30-40' in height. Propagation is very easy by seed (abundant on our trees) with or without stratification. The only major problem of this tree is that it is unfamiliar to the plant industries and public - and thus hard to promote and sell. Several species exist - all are similar and of good landscape value. Our largest tree (a female with black fruit in fall) is at the south end of the arboretum parking lot and others exist in the west arboretum. Seed is available from our tree or can be ordered from commercial sources. Should be tried by tree producers of this area.

20. *Rhododendron* X (*mucronulatum* X *chapmanii*) - Unnamed Hybrid (Ericaceae). This broadleaved evergreen shrub hybrid brings together desirable characteristics of two very different parents. *R. mucronulatum* is a deciduous Japan/Korea/China species which produces bright rose-purple flowers very early in the spring. *R. chapmanii* is a rare Florida endemic evergreen species with pink flowers later in the season and excellent heat and disease resistance. The hybrid is very vigorous, evergreen and produces pale purple flowers earlier than any other rhododendron in our collection. In the display lath house growing conditions it tends to grow somewhat leggy and would probably be better planted in full sun to produce more shapely growth. It would still benefit from installation in the type of planting bed used for azaleas and rhododendrons - though disease resistance should be high for the genera. We have found it very easy to propagate from semi-hardwood cuttings throughout the year and very rapid growing. It will probably reach 6' in height - and may have commercial potential with the early flowering a plus in garden center marketing. Our plant is in the display lath house.

21. *Rosa* 'Nastarina' - 'Nastarina' Rose (Rosaceae). Several years ago we received a large number of "old rose" cultivars from The Antique Rose Emporium in Brenham, Texas to evaluate as low-maintenance shrubs (no spraying or heavy care) for the landscape. The first "success" to come from that trial was the 'Petite Pink Scotch' which is currently receiving attention from the nursery industry here. I have also been impressed with the single to semi-double white flowered 'Nastarina' as one of the cultivars which seems to rebloom best

with the longest season of flowering through the summer and fall. It originated in 1879 in old Persian gardens in Iran where it was grown for its fragrance and showy fruit. The foliage has been essentially problem-free in our situation - but I am told that blackspot does severely affect it in Texas. Our plant reached a size of 4' in height and 6' wide before we cut it back for propagation - and it will likely get considerably larger than that. I would see its use as a shrub rose for large shrub borders in commercial or park situations to be viewed from a distance - in full sun and with good air circulation. It roots easily from semi-hardwood cuttings in summer under mist and grows off quite rapidly. Our plant is located in the White Garden against the visitor center by the window into the garden.

22. *Sambucus nigra* 'Marginata' - Variegated Black Elder (Caprifoliaceae). A deciduous shrub native to Europe through Russia and cultivated there since prehistoric times for the edible fruit with many cultivars developed over the centuries. This form was selected in England in 1846 and is widely grown in Europe for its white variegated ornamental foliage as well as fruit. Hardy to zone 6 and can be used throughout N. C. but probably most attractive and with the best fruit production in the mountains. Does best with ample moisture in full sun. Can reach 15' in height but more commonly seen 5-8'. Very easily propagated by summer cuttings. Our arboretum plant now in the small area north of the display lath house by the arboretum office but will likely be moved this winter.

23. *Sophora davidii* (or *vicifolia*) - No common name which is a marketing problem (Leguminosae). A deciduous shrub from China which was introduced to western cultivation in 1897 and has never achieved commercial useage in spite of many fine landscape qualities. Hardy to zone 5 and will grow well throughout N. C. with tolerance to poor soils, drought, and freedom from any pests. The plant is a much branched full shrub reaching 4-7' in height with finely divided and attractive foliage. The abundant panicles of bluish-violet to white flowers appear in early summer and are followed by masses of brown seed pods on the plant until winter. Summer cuttings root easily under mist and the seed germinate readily after 3 months stratification. Our plant is located in the west arboretum below the Japanese Garden near the front edge of the south planting bed. Abundant seed or cuttings are available to anyone interested.

24. *Stachyurus praecox* - No common name which is a marketing problem (Stachyuaraceae). A deciduous shrub introduced from Japan in 1864 which has never achieved widespread popularity anywhere in the nursery industry. A spreading shrub reaching 6-10' in height with primary ornamental value from the very attractive and striking 3-5" pendulous racemes of greenish-yellow flowers in early spring. Hardy to zone 6 or 7 and can be grown in full sun or light shade. Roots easily and quickly from softwood cuttings in summer - can be maintained under long day photoperiod in a greenhouse for year-round cutting production. Our plant is in the witch hazel bed in the east arboretum. (For future evaluation we just received *S. chinensis* from Germany which is supposedly superior in ornamental value but very rare in cultivation; also from England - *S. chinensis* 'Magpie' - a variegated form introduced by Hillier in 1945. Six other species exist in China which have never been introduced to cultivation.)

25. *Xanthorhiza simplicissima* - Yellowroot (Ranunculaceae). A native (New York to Florida) deciduous shrubby groundcover introduced to European cultivation in 1776. It spreads by root suckering to make large groundcover masses 1-3' in height. Tolerant of very difficult sites - grows and spreads more rapidly in cool, moist soils and can be used throughout N. C. Spoken of highly in most garden references and has performed well in the arboretum - but very rarely used in southern landscapes in spite of being native to the region. Normally propagated by division of clumps in winter; but Dirr reports winter root cuttings or June stem cuttings also work. Our clump is located in the east arboretum, just east of the sun groundcovers/paving materials plaza by the Eleagnus collection.

GREAT NEW PLANTS COMING IN THE 1989 DISTRIBUTION - OUR MOST EXCITING LISTING EVER!!!

ACANTHOPANAX SIEBOLDIANA 'VARIEGATA' - excellent creamy-white variegated deciduous shrub.

AKEBIA QUINATA 'ALBA' - rare white flowered variety of this deciduous vine.

CERCIS CHINGII - new species to cultivation from China - very early flowering and showy.

COTONEASTER 'STRYB'S FINDLING' - superb dwarf, flat cultivar for groundcover use.

HYDRANGEA MACROPHYLLA 'QUADRICOLOR' - collected during 1988 sabbatic leave - four colored showy leaves.

INDIGOFERA DECORA - beautiful groundcover plant to 1' with summer white flowers.

JUNIPERUS CONFERTA 'SILVER MIST' - stunning new cultivar of shore juniper with silver blue foliage.

MAGNOLIA BIONDII - new Chinese species recently introduced to cultivation by Arnold Arboretum.

PHILADELPHUS CORONARIUS 'VARIEGATA' - White variegated foliage and white flowers on a deciduous shrub.

PIERIS JAPONICA 'LITTLE HEATHGREEN' - dwarf English cultivar collected during 1988 sabbatic leave.

PLATANUS CASHMERICANA - rare compact tree with handsome cutleaf foliage - good commercial potential.

SINOCALYCANTHUS SINENSIS - Rare China genus with handsome foliage and showy white camellia-like flowers.

SINOJACKIA REHDERIANA - rare China tree - white flowers and beautiful foliage - fine commercial potential.

STYRAX JAPONICA 'SOHUKSAN' - incredible thick, glossy large-leaved form of this beautiful white flowering tree found in Korea in 1985 - probably the most outstanding ornamental plant to come from the expedition.

VIBURNUM PLICATUM 'SUMMER SNOWFLAKES' - outstanding UBC shrub release - 6 months bloom.

VINCA MINOR 'ALBA VARIEGATA' - white flowered, white variegated evergreen groundcover.

WEIGELA X 'RUBIDOR' - striking new shrub with gold foliage and bright red flowers - obtained in England during 1988 sabbatic leave in its first year of release.

AND MORE - LOTS MORE!!

1988 NCSU Arboretum (now the JC Raulston Arboretum) PLANT DISPLAY

NCAN Short Course and Trade Fair - Asheville, NC - August 14-16

In the year since the last Asheville NCAN Short Course, nearly 700 different new plants have been added to the collections of the NCSU Arboretum (now the JC Raulston Arboretum). The collections currently hold about 5,000 different ornamental plants. Plants on display represent some of the diversity acquired in the past year.

Aralia elata 'Silver Umbrella' (Araliaceae). Received as a gift from a Dutch grower this spring. One of the choicest of connoisseur plants in Europe due to its great ornamental beauty and difficulty in propagation which keeps it a rare and very expensive plant. It can reach a height of 10' with a leaf spread of 6' in diameter. Propagated only by grafting which is considered quite difficult. Normally grafted on the *elata* understock but we have successfully grafted it on the NC native, *Aralia spinosa*. There are three variegated clones of this plant on the European market. I do not know of a single U.S. propagator at this time, with only imported plants when rarely available.

Arctostaphylos uva-ursi 'Wood's Red' (Ericaceae). An excellent evergreen groundcover best suited to cooler conditions in the western half of the state - but can be quite successful in the east half with good drainage. Single plants have spread 6' in diameter in the Gardner Arboretum on the NCSU campus with a height of 3-4". Easily propagated by cuttings throughout the year. This cultivar and 'Massachusetts' are probably the best for use in NC.

Buddleia lindleyana (Loganiaceae). Plants come to the arboretum in many ways - this one arrived as a twig in a plastic bag from a county agent wanting an identification of a showy flowering plant which had been found at an abandoned old house in the country near the coast. Our outstanding horticultural taxonomist, Dr. Paul Fantz, keyed it out and in references we found that it was a species which has naturalized itself through the southeastern U. S. over the years since its introduction (a Chinese species which was taken to Europe in 1843). We rooted the sample and this summer it has been in continuous bloom for the last several months with the masses of purple-violet flowers seen here - we look forward to seeing it in full splendor when added to the garden.

Carex caryophylla 'The Beatles' (Cyperaceae). A new evergreen groundcover introduced to the European market at the Liverpool Garden Exhibition in England in 1984. Individual plants can reach 15" in diameter and 10" high with long thin light green leaves. Mature plants are quite beautiful with their unruly mop-like appearance. Useful in sun or can tolerate fairly heavy shade. Propagated by division of the clumps.

Cercis canadensis 'Silver Cloud' (Leguminosae). 'Silver Cloud' is one of two existing variegated redbud cultivars (the other is a *C. siliquastrum* cultivar) and was developed by Klein Nursery in Kentucky. We have long sought it for our collection and finally received budwood this spring. The white flecked and mottled foliage is fragile and will sunscorch easily - needing shade planting with moisture for best display. Six other new additions have included: *C. canadensis* 'Flame' - a double flowered cultivar; *C. canadensis* 'Alba' - white flowered; *C. canadensis* 'Alba Nana' - dwarf white flowered; *C. reniformis* 'Texas White' - white flowers and glossy green foliage; and *C. siliquastrum* 'Alba' and 'Bodnant'. We now have 23 different cultivars and species and continue to hunt the remaining 21 which are known to exist. Budding of named cultivars is difficult and we are indebted to Mr. Stephen Burns of Durham for propagating these new types to add to our collection.

Cercis mexicana (Leguminosae). The Mexican redbud is one of the most exciting of our new redbuds with glossy small undulate leaves and smaller size than the eastern redbud - a most beautiful landscape plant.

Cornus controversa 'Variegata' - Variegated Giant Dogwood (Cornaceae). This is another of the great connoisseur plants of Europe - a white foliage form (Ireland, 1897) of the deciduous flowering tree species from Japan - again with fine ornamental value and difficulty of propagation making it very expensive in the few places where it is produced. We had the plant once before - but accidentally allowed it to be shaded out by a faster growing plant in the jungle of our lath house. This plant was obtained from Hilliers Nursery in England this summer at the end of my sabbatical and has survived bareroot transport and repotting. Now that we have a good supply of *C. controversa* understock available we will be working with propagation of this plant next year to see just why it is considered so difficult and to see if we can get a U.S. producer going with this crop. (Later note after the trade show for this newsletter - Mr. Burns has already successfully grafted this plant on arboretum understock and it is likely that by 1990 we could have N.C. producers with it ready for sale).

Cornus mas 'Variegata' - Variegated cornelian cherry (Cornaceae). A deciduous flowering tree native to middle and southern Europe. Each year we are more and more impressed with the species cornelian cherry in the arboretum with its very early spring flowers of bright yellow on bare branches long before the main spring color begins (along with a superb seedling of *Cornus officinalis* which is even better). This variegated cultivar was obtained at Savill Gardens in England this summer (along with the golden variegated 'Elegantissima') and will add summer long interest to the plant with its handsome foliage. We also have 'Aurea' - a golden foliage form, and 'Golden Glory' - a showy flowering clone, in our plantings.

Cupressocyparis leylandii 'Golconda' (Cupressaceae). The leyland cypress in NC is closely associated with the NCSU Arboretum (now the JC Raulston Arboretum) (for better or worse!) and we have a fine collection of cultivars in the plantings. This new golden cultivar from Bressingham Nursery entered the English market this year and is considered an improvement on 'Castlewellan' for the intensity of the gold pigment. Since 'Castlewellan' fades to green badly in the heat of our N. C. summers it is hoped this new plant may give us a better color form. The strange appearance of the plant on display (the "leyland crewcut") results from maximum cutting removal when it arrived in Raleigh to begin buildup of numbers for distribution as soon as possible (likely in 1990). At this time we still recommend 'Leighton Green' as the best cultivar for landscape use with dark green foliage and good form (but rarely seen in N.C. production).

Cupressus macrocarpa 'Horizontalis Aurea' (Cupressaceae). The Monterey Cypress is native to the coastal area of California and numerous cultivars have been developed in England and New Zealand where the species does so well. In Raleigh their performance has been mixed - they have grown rapidly in good years but the extreme winters of the last decade have killed them. They are considered zone 7/8 plants and we've had some years of zone 6 winters. We obtained this and two other cultivars from the noted New Zealand nursery firm of Duncan & Davies for trial in Raleigh and Wilmington. In Europe this plant is becoming a major interior foliage plant in greenhouse production. The brilliant yellow foliage is quite striking when grown in full sun.

Diospyros palmeri (Ebenaceae). Among the many rare "miscellaneous" plants we receive are many wild species which have perhaps never been grown in cultivation, or evaluated for ornamental potential, or for potential climatic adaptations. With good personal connections to people in Texas from my previous job there - we end up with many fascinating plants from a wide variety of native habitats in Texas and Mexico - materials virtually unexplored in the eastern U.S. at this point. This Mexican persimmon is one which will be added to the plantings next spring to see if it can take our summer moisture and winter cold. In the greenhouse it has remained evergreen and the pendulous branching habit could be quite beautiful if maintained in plants as they mature. This year we also added 4 species of Chinese persimmons collected by NCSU Horticulture faculty, Dr. Jim Ballington, during his recent collections in that country. Also, *D. lotus*, the date plum, fruited in the arboretum for the first time this year.

Erythrina herbacea 'Alba' (Leguminosae). This native southeastern U. S. plant normally produces bright red flowers on plants which may be herbaceous perennials to woody shrubs depending on how far north they are grown. Recently Woodlanders Nursery found a single plant in the wild which had white flowers, propagated it by cuttings, and offered the first few plants to the trade in 1988. The species has grown well in Raleigh and we will test the hardiness of this selection when planted out next year.

Euscaphis japonica (Staphyleaceae). A 20-30' deciduous shade tree from the 1985 Korean collection expedition with great potential as a new ornamental plant. It grows rapidly and begins flowering and fruiting when young. The flowers are yellowish-green and appear in mid-summer. The fruit are the most showy part of the plant and turn red as they mature in the fall. The fruit split open revealing glossy black seeds against the red pulp which remain on the tree for several months. The foliage is dark green and quite handsome - later turning a rich dark red in fall color. Grown from seed or from softwood cuttings under mist in summer. Should grow throughout N.C.

Gymnocladus chinensis (Leguminosae). This spring Dr. Ted Dudley of the U.S. National Arboretum obtained seed of this rare Chinese species of "Kentucky" Coffeetree and generously shared a few with us. They germinated quickly without cold stratification and are growing rapidly. We are excited about addition of them to our collection - but worried about the report of Krussman in the Manual of Broadleaved Trees & Shrubs that it is a zone 9 plant. However, with our summer heat to ripen wood we are very successfully growing other Chinese plants considered as zone 9 in Europe so still feel there is possibility for it. We will try a plant in Wilmington also for security.

Hydrangea macrophylla 'Quadricolor' (Hydrangeaceae). A striking lacecap hydrangea with varied shades of white, cream, lime, and green in the foliage - listed in the New York Botanical Garden Encyclopedia of Horticulture as the best variegated cultivar of this group. Obtained in England in June and we already have cuttings rooted and potted up in the first step in preparation for distribution of the plant next summer.

Ilex verticillata 'Afterglow' (Aquifoliaceae). The deciduous hollies will surely get more of their deserved attention as superb ornamental plants after the color cover photo and magnificent article on the group by Dr. Dirr in the August 1 issue of American Nurseryman magazine. We have about 20 cultivars in the arboretum and two years ago they began to reach fruiting age and are more spectacular each year. 'Afterglow' is one of many Robert Simpson (Vincennes, IN) introductions and has red fruits which last until spring on plants up to 10' in height. We find the deciduous hollies generally root easily from cuttings taken through summer into fall and placed under mist (see the Dirr article for details). Showing the obvious power of a good authority, the press, and color photos - we've had more cuttings taken from the arboretum plants in the arboretum in the two weeks since the Dirr article came out than in the previous 5 years of trying to convince growers here to take them!

Juniperus chinensis 'Kuriwao Gold' (Cupressaceae). There are a vast number of cultivars of the widely popular Chinese juniper with new ones being added daily. This new cultivar obtained in England during my sabbatic leave is apparently not yet in any of the American reference sources - probably a recent New Zealand introduction judging from the name. The two-tone gold color is quite attractive on this young plant and it will be interesting to see how well it is maintained in our heat when planted out to the field.

Juniperus deppeana 'McFeters' (Cupressaceae). A plant we've brought to the short course for display several times before - and distributed at the short course in our gift packs last year. Each year when we go to the nursery to select plants for our NCAN short course display - this one leaps out as among the most dramatic for eye appeal with the bluest color of any plant in our collection. With relatively easy propagation and rapid growth - it deserves commercial production and use.

Juniperus squamata 'Blue Alps' (Cupressaceae). Another of the 1988 sabbatic acquisitions and again a new European cultivar which does not yet appear in our literature. Of two recent Dutch introductions - 'Blue Star' (1964), a dwarf globe shaped plant, has already entered the U.S. market with increasing popularity; and 'Blue Carpet' (1972) is another very attractive spreading cultivar which has great appeal that is beginning to appear. The appearance of this plant and its name would seem to indicate that it will be more of an upright, conical shaped plant as it ages.

Juniperus virginiana 'Grey Owl' (Cupressaceae). The native Eastern red cedar is a new focus for the arboretum as a result of an article written and soon to appear in issue five of Fine Gardening (subscription information in newsletter #17, p. 24).. In the course of the writing, over 40 cultivars of all sizes, forms, and colors were discovered; and an awakening occurred of the potential of superior forms of this tough plant seen in the wild in N.C. We have already added 8 cultivars and are seeking others at this time. 'Grey Owl' originated in 1938 and is a spreading shrub with silvery-grey foliage. It is felt to be a hybrid between red cedar and Pfitzer juniper. A very beautiful wild red cedar seedling which is strongly weeping and heavily fruited exists at the first rest stop west of Winston-Salem on I-40 on the north side of the road - we plan to propagate from the plant and feel it may be worthy of naming and introduction. We would be interested in learning of other interesting or superior forms around the state and perhaps receiving a polaroid photo and cuttings for trial (please document the location so we could locate it again if you submit anything).

Lygodium japonicum (Schizaeaceae). The Japanese climbing fern is a handsome herbaceous vine with delicate foliage. What appears to be the climbing stems are in reality the midribs of very elongated leaves which can reach 6-8' in height on a trellis or support - with true stem below ground. A very fine landscape plant but rarely seen in commercial trade. Propagated by division of old clumps or from spores. (In September Tony Avent brought me a terrarium filled with hundreds of young plants grown from the spores off a single leaf from the arboretum plant - just scattered on top of potting soil with the sealed terrarium set in the shade under a bench in his greenhouse - easy and remarkably effective).

Mahonia trifoliata (Berberidaceae). Another of the Texas plants and an addition to one of our better genera collections (22 species and cultivars). This handsome species with blue-gray foliage was introduced to Europe in 1839 but is only now beginning to be used commercially in the southwest where it is native to Mexico, Texas and New Mexico. These 2' high plants are only a year old from seed and will be planted out this fall. Krussman cites the species as being hardy to zone 9, but it is far more likely 7/8 in areas with summer heat. It is an evergreen shrub which can grow to 4-6'.

Parrotiopsis jacquemontia (Hamamelidaceae). A deciduous shrub/tree from the Himalayas which was introduced to the west in 1870. Although a relatively easy plant to propagate from cuttings, with few pest problems, adaptable to most sites, and hardy throughout N.C. - it remains more in the novelty, "of interest plants", category without commercial use. I saw the flowers for the first time this spring at the Villa Taranto arboretum in Europe - attractive and certainly of ornamental merit.

Picea omorika 'Nana' (Pinaceae). A dwarf cultivar of this conifer species native to Yugoslavia which was introduced by a Boskoop (Holland) nursery in 1930. A slow-growing very handsome round plant with silvery blue leaves which can be grown throughout N.C. Normally propagated by grafting on Norway spruce seedlings.

Rhododendron schlippenbachii (Ericaceae). The royal azalea is one of the most beautiful of deciduous azaleas with pink flowers early in spring. It was introduced to western culture from Manchuria in 1893. In northern landscapes it is an outstanding plant (Dirr - "One of the finest azaleas; no adequate way to do justice to the beauty of this plant by the written word"). Unfortunately, the plants have not been heat tolerant and their use is confined to northern areas. During the 1985 Korean expedition, we collected seed of this species near sea level in the southern part of the country - in an area climatically similar to Charleston, S.C. with heat, humidity and little winter chilling. The seedlings from this population are growing very well in our nursery and the display lath house and will bloom next spring for the first time - hopefully giving rise to a seed source for this species which can be used through the south. Plants vary considerably in growth form and the compact plant on display could be a potentially fine new landscape cultivar if the flowers also prove of quality worthy of propagation and naming.

Rhus glabra 'Lacinata' (Anacardiaceae). A cut-leaf form of this native deciduous shrub which was discovered and introduced in the 1850's - and honored with a First Class Certificate by the Royal Horticultural Society in England in 1867 for its outstanding ornamental merit. It is virtually identical to the more commonly grown *R. typhina* 'Lacinata' except the stems are smooth instead of fuzzy. Both plants make excellent tough plants with great foliage beauty, blazing orange-red fall color, and architectural branching of the deciduous plants in winter. They do spread rapidly with root suckers and are best used in areas such as highway banks, parking lot islands, or where they can be confined (like bamboo) in ground containers. Propagation is by root cuttings in winter.

Schizofragma integrifolium (Hydrangeaceae). Of the three "climbing hydrangeas" - this is likely the most vigorous growing, largest, and spectacular flowering - but also the rarest in availability and possibly not even in commercial culture in this country. The three plants (*Hydrangea anomala* ssp. *petiolaris* - the most commonly grown; and *S. hydrangeoides*) are deciduous vines which grow on wood or brick surfaces to 20-80' in height and produce attractive white-flowered inflorescences in early summer. Obtained in England this summer - we have already propagated a flush of cuttings and will chop up the plant again after the trade show to hopefully get it out into the trade as soon as possible. (Later note - they are rooting well and it appears by keeping them under extended photoperiod lighting we can continue to flush growth and propagate through the winter to build up numbers for distribution next year). Introduced from central and western China in 1901 by Ernest Wilson and listed as being hardy in zone 7 (which may account for its commercial void as northeastern growers cannot grow it - and it has not yet been popularized by southern public gardens). Six other species exist in Asia which have not been introduced to western culture - yet (we can always hope!).

Serissa foetida - Longwood Gardens Clone (Rubiaceae). A broadleaved evergreen shrub introduced from Japan in 1878 (where it is grown as a hedging shrub) with small but showy white to pink flowers on the half dozen named clones which exist. Krussman lists it as a zone 9 plant but we have had one plant in the arboretum for ten years through all the bad winters without losing it - and have added various clones in recent years. This plant arrived last year - and seems particularly impressive as it flowers much more heavily and repeatedly than any of the other clones we have. It has had the heavy flower display shown here for the last three months and shows no signs of letting up. It should be an outstanding dwarf landscape plant for the coastal areas of N.C. - good in the Piedmont; and could be grown in the mountains as an interior plant, as a summer bedding plant, or possibly even as a herbaceous perennial with mulching. After the short course we will shred the plant for propagation and plan to offer it next summer in our distribution. (Later note - cuttings rooted in 3 weeks and we had over 250 plants potted by September! Some will be included in the members plant distribution on October 26).

Sophora tomentosa (Leguminosae). Another of the plants grown from seed received from Lone Star Nursery in Texas for trial - a zone 10 (Krussman) plant originally from old world tropics but cultivated around the world throughout the tropics today. Even before looking it up in the reference books - the lush soft growth of silver foliage (common name - "Silver Bush") "looked" tender to me with little hope for survival outside at the arboretum. We will see if we can propagate our only plant by cuttings (doubtful) to get multiple plants to try in Raleigh as a mulched herbaceous perennial; and send it to the new Wilmington arboretum as the most likely place it might survive in the state. If it would grow in low light levels (doubtful) - it would be a most beautiful house plant.

Styrax wilsonii (Styracaceae). A rare white-flowering deciduous shrub discovered in China in 1908 by Wilson and rare in cultivation due to its lack of hardiness (Krussman - Zone 8/9) for inclusion in northern arboreta and botanic gardens. This 3' plant was rooted from a cutting in the San Francisco Strybing Arboretum in 1981 and we've been overwintering it as a container plant in the greenhouse ever since - hoping for our Zone 8 display house at the arboretum one day to plant it there. After the trade show we will send it to the new Wilmington arboretum for planting out there and root more cuttings to continue it in the arboretum collection. I still have hope that with our summer heat we might pick up enough extra hardiness to handle it in Raleigh. The NCSU Arboretum (now the JC Raulston Arboretum) *Styrax* collection is getting fairly good with about 14 species and cultivars now (China is still full of numerous ornamental species which have never been introduced to cultivation - drool, drool!) - and we hope to release the outstanding form found in Korea in 1985 at the 1989 short course - possibly the most beautiful *Styrax* in cultivation - *S. japonica* 'Sohuksan'.

Weigela X 'Rubidor' (Caprifoliaceae). Weigelas are very easy, fast deciduous flowering shrubs which produce a good show of late spring flowers with little effort. Many, many (probably way too many) cultivars exist with an explosion of them coming out in the last several years. This cultivar is a 1988 introduction of Bressingham Nursery in England and was featured at the Chelsea Flower Show this spring as their "hot, new 1988 plant". It is indeed visually striking as the first cultivar with bright gold foliage and bright red flowers - not to everyone's color sensibility - but unquestionably eye-catching in the garden center when in bloom. So fast and easy we already have extra potted plants after six weeks back and will distribute it next summer at the short course. We have added 7 other cultivars to the collection this summer as well.

NEW PLANTS RECEIVED BY THE NCSU Arboretum (now the JC Raulston Arboretum) - JANUARY - JULY 1988

88/0001 - *Cyclamen balearicum* - Montrose Nursery - Hillsborough, NC - 3" pot - 01/20

88/0002 - *Cyclamen cilicium* - Montrose Nursery - Hillsborough, NC - 3" pot - 01/20

88/0003 - *Cyclamen coum* 'Album' - Montrose Nursery - Hillsborough, NC - 3" pot - 01/20

88/0004 - *Cyclamen coum* 'Caucasium' - Montrose Nursery - Hillsborough, NC - 3" pot - 01/20

88/0005 - *Cyclamen coum* 'Dark Form' - Montrose Nursery - Hillsborough, NC - 3" pot - 01/20

88/0006 - *Cyclamen coum* 'G-2' - Montrose Nursery - Hillsborough, NC - 3" pot - 01/20

88/0007 - *Cyclamen graecum* - Montrose Nursery - Hillsborough, NC - 3" pot - 01/20

88/0008 - *Cyclamen hederifolium* 'Album' - Montrose Nursery - Hillsborough, NC - 3" pot - 01/20

88/0009 - *Cyclamen libanoticum* - Montrose Nursery - Hillsborough, NC - 3" pot - 01/20

88/0010 - *Cyclamen mirabile* - Montrose Nursery - Hillsborough, NC - 3" pot - 01/20

88/0011 - *Cyclamen repandum* - Montrose Nursery - Hillsborough, NC - 3" pot - 01/20

88/0012 - *Cyclamen trochopteranthum* - Montrose Nursery - Hillsborough, NC - 3" pot - 01/20

88/0013 - *Cupressocyparis leylandii* 'Carolina Gold' - Piedmont/Carolina Nursery - Colfax, NC - 5 gal/2' - 01/20

88/0014 - *Cycas revoluta* - Henry Burkert - Wilmington, NC - 1 gal - 01/20

88/0015 - *Prunus laurocerasus* 'Otto Luyken' - Champion Nursery - Apex, NC - 3 gal - 01/20

88/0016 - Prunus laurocerasus 'Schipkaensis' - Champion Nursery - Apex, NC - 3 gal - 01/20

88/0017 - Prunus laurocerasus 'Zabeliana' - Champion Nursery - Apex, NC - 3 gal - 01/20

88/0018 - Gymnocladus chinensis (8) - Dr. Ted Dudley - USNat Arb, DC - Seed - 01/22

88/0019 - Chamaecyparis obtusa 'Prostrata' - Bernheim Forest Arb - Clermont, KY - Cuttings - 01/23

88/0020 - Chamaecyparis pisifera 'Squarrosa Cristata' - Berheim Forest Arb - Clermont, KY - Cuttings - 01/23

88/0021 - Cornus sericea 'Isanti' - Berheim Forest Arb - Clermont, KY - Cuttings - 01/23

88/0022 - Forsythia X intermedia 'Mertensiana' - Bernheim Forest Arb - Clermont, KY - Cuttings - 01/23

88/0023 - Weigela X 'Candida' - Bernheim Forest Arb - Clermont, KY - Cuttings - 01/23

88/0024 - Cornus sanguinea - Bernheim Forest Arb - Clermont, KY - Cuttings - 01/23

88/0025 - Forsythia X intermedia 'Goldzauber' - Bernheim Forest Arb - Clermont, KY - Cuttings - 01/23

88/0026 - Cornus sericea coloradensis 'Cheyenne' - Bernheim Forest Arb - Clermont, KY - Cuttings - 01/23

88/0027 - Kolkwitzia amabilis 'Rugs Pink' - Berneim Forest Arb - Clermont, KY - Cuttings - 01/23

88/0028 - Ilex glabra 'Ivory Queen' - Bernheim Forest Arb - Clermont, KY - Cuttings - 01/23

88/0029 - Ilex glabra 'Nordic Conquest' - Bernheim Forest Arb - Clermont, KY - Cuttings - 01/23

88/0030 - Agapanthus africanus 'Peter Pan White' - Magnolia Gardens Nursery - Magnolia, TX - Liners - 01/23

88/0031 - Canna 'Eileen Gallo' - Sunsweet Bulb Co - Sumner, GA - Rhizome - 01/29

88/0032 - Canna 'Red Stripe' - Sunsweet Bulb Co - Sumner, GA - Rhizome - 01/29

88/0033 - Canna 'Confetti' - Sunsweet Bulb Co - Sumner, GA - Rhizome - 01/29

88/0034 - Canna 'Eureka' - Sunsweet Bulb Co - Sumner, GA - Rhizome - 01/29

88/0035 - Canna 'King's Gold' - Sunsweet Bulb Co - Sumner, GA - Rhizome - 01/29

88/0036 - Canna 'My Best' - Sunsweet Bulb Co - Sumner, GA - Rhizome - 01/29

88/0037 - Crinum 'Catherine' - Sunsweet Bulb Co - Sumner, GA - Division - 01/29

88/0038 - Crinum virginicum - Sunsweet Bulb Co - Sumner, GA - Division - 01/29

88/0039 - Crinum americanum 'Robustum' - Sunsweet Bulb Co - Sumner, GA - Division - 01/29

88/0040 - Crinum asiaticum - Sunsweet Bulb Co - Sumner, GA - Division - 01/29

88/0041 - Crinum scabrum - Sunsweet Bulb Co - Sumner, GA - Division - 01/29

88/0042 - Prunus dulcis - NCSU Peach Breeding - Raleigh, NC - Seed - 02/03

88/0043 - Aster caroliniana - Woodlanders - Aiken, SC - 4" pot - 02/03

88/0044 - Decumaria barbara - Woodlanders - Aiken, SC - 4" pot - 02/03

88/0045 - Jasminum X stephanense - Woodlanders - Aiken, SC - 4" pot - 02/03

88/0046 - Liatris earlei - Woodlanders - Aiken, SC - 4" pot - 02/03

88/0047 - Liatris elegans - Woodlanders - Aiken, SC - 4" pot - 02/03

88/0048 - Tradescantia rosea graminea - Woodlanders - Aiken, SC - 4" pot - 02/03

88/0049 - Erythrina herbacea 'Alba' - Woodlanders - Aiken, SC - 4" pot - 02/03

88/0050 - Pycnothymus rigidus - Woodlanders - Aiken, SC - 4" pot - 02/03

88/0051 - Corylopsis veitchiana - Woodlanders - Aiken, SC - 4" pot - 02/03

88/0052 - Solidago pauciflosculosa - Woodlanders - Aiken, SC - 4" pot - 02/03

88/0053 - Andrachne phyllanthoides - Woodlanders - Aiken, SC - 2 qt - 02/03

88/0054 - *Ehretia anacua* - Woodlanders - Aiken, SC - 2 qt - 02/03

88/0055 - *Mimosa borealis* - Woodlanders - Aiken, SC - 4" pot - 02/03

88/0056 - *Persea humulis* - Woodlanders - Aiken, SC - 2 qt - 02/03

88/0057 - *Magnolia pyramidata* - Woodlanders - Aiken, SC - 1 gal - 02/03

88/0058 - *Aesculus pavia humulis* - Woodlanders - Aiken, SC - 1 gal - 02/03

88/0059 - *Acer mono* v. *ambigua* - Dr. John Gibson - Tifton, GA - 1 gal - 02/03

88/0060 - *Nyssa ogeche* - Dr. John Gibson - Tifton, GA - 4" pot - 02/03

88/0061 - *Myrica pumila* - Dr. John Gibson - Tifton, GA - 1 gal - 02/03

88/0062 - *Acer takeshimense* - Dr. John Gibson - Tifton, GA - 1 gal - 02/03

88/0063 - *Lilium* 'Strawberry Shortcake' - Wayside Gardens - Hodges, SC - Bulb - 02/24

88/0064 - *Rosa* 'Ferdy' - Wayside Gardens - Hodges, SC - 4" pot - 02/24

88/0065 - *Rosa* 'White Meidiland' - Wayside Gardens - Hodges, SC - 4" pot - 02/24

88/0066 - *Styrax japonica* 'Pink Chimes' - Wayside Gardens - Hodges, SC - 1 gal - 02/24

88/0067 - *Prunus* 'Rosy Cloud' - Wayside Gardens - Hodges, SC - 1 gal - 02/24

88/0068 - *Viburnum* X *bodnantense* 'Dawn' - Wayside Gardens - Hodges, SC - 1 gal - 02/24

88/0069 - *Rhus glabra* 'Laciniata' - Bernheim Forest Arb - Clermont, KY - Root Cuttings - 02/24

88/0070 - *Cercis reniformis* 'Texas White' - Fox Hill Nursery - ? - 3 gal/2' - 02/24

88/0071 - *Cercis canadensis* 'Alba' - Fox Hill Nursery - ? - 3 gal/2' - 02/24

88/0072 - *Leutkea pectinata* - Washington Park Arb - Seattle, WA - Division - 03/07

88/0073 - *Sorbaronia sorbifolia* (940/41) - Washington Park Arb - Seattle, WA - Root Cuttings - 03/07

88/0074 - *Nandina domestica* 'Royal Princess' - Buccannon's Nursery - ? - 2.5 gal - 03/08

88/0075 - *Nandina domestica* 'Lowboy' (PP5560) - Buccannon's Nursery - ? - 2/5 gal - 03/08

88/0076 - *Allium elatum* X *christophii* - DeHertogh - Raleigh, NC - Bulbs - 3/09

88/0077 - *Galanthus nivalis reginae-olgae* - Dr. Hans Simon - Germany - 3 bulbs - 3/10

88/0078 - *Leucojum autumnale oporanthus* - Dr. Hans Simon - Germany - 22 bulbs - 3/10

88/0079 - *Dierama pulcherrimum* 'Dark Red Form' - Dr. Hans Simon - Germany - 4 Corms - 3/10

88/0080 - *Helleborus foetidus* 'Wester Fliske' - Dr. Hans Simon - Germany - Plant - 3/10

88/0081 - *Helleborus* X '*Cattleya Stmlinse*' - Dr. Hans Simon - Germany - Plant - 3/10

88/0082 - *Geranium pratense* 'Striatum' (i.e. SU. Bicolor) - Dr. Hans Simon - Germany - Plant - 3/10

88/0083 - *Aster* X *frikertii* 'Junsfrau' - Dr. Hans Simon - Germany - Plant - 3/10

88/0084 - *Liriope platyphylla* - Dr. Hans Simon - Germany - Division - 3/10

88/0085 - *Ophiopogon japonicum* 'Intermedium' - Dr. Hans Simon - Germany - Division - 3/10

88/0086 - *Agapanthus inapertus* - Dr. Hans Simon - Germany - Division - 3/10

88/0087 - *Epimedium pubigenum* - Dr. Hans Simon - Germany - Plant - 3/10

88/0088 - *Tulbaghia cepacca* - Dr. Hans Simon - Germany - Bulb - 3/10

88/0089 - *Ophiopogon jaburan* 'Variegatum' - Dr. Hans Simon - Germany - Division - 3/10

88/0090 - *Agapanthus praecox* 'Minimus' - Dr. Hans Simon - Germany - Division - 3/10

88/0091 - *Epimedium* X *youngianum* 'Young' - Dr. Hans Simon - Germany - Division - 3/10

88/0092 - Paeonia wittmanniana - Dr. Hans Simon - Germany - Plant - 3/10

88/0093 - Ophiopogon japonicum 'Minor' - Dr. Hans Simon - Germany - Division - 3/10

88/0094 - Epimedium pevualchicum 'Frohuleitew' - Dr. Hans Simon - Germany - Division - 3/10

88/0095 - Liriope kansuensis - Dr. Hans Simon - Germany - Division - 3/10

88/0096 - Liriope muscari 'Ingwersen' - Dr. Hans Simon - Germany - Division - 3/10

88/0097 - Ophiopogon jaburan - Dr. Hans Simon - Germany - Division - 3/10

88/0098 - Agapanthus africanus 'Josephine' - Dr. Hans Simon - Germany - Division - 3/10

88/0099 - Tiarella cordifolia 'Moorgrsh' - Dr. Hans Simon - Germany - Plant - 3/10

88/0100 - Agapanthus X 'Profusion' - Dr. Hans Simon - Germany - Division - 3/10

88/0101 - Agapanthus africanus 'Blue Globe' - Dr. Hans Simon - Germany - Division - 3/10

88/0102 - Carex caryophyllea 'The Beatles' - Dr. Hans Simon - Germany - Division - 3/10

88/0103 - Paeonia miokosewitschii - Dr. Hans Simon - Germany - Division - 3/10

88/0104 - Quercus austrina - J. A. Lee - Screven Co., GA - Seedlings - 03/16

88/0105 - Erythrina herbacea - J. A. Lee - Brunswick, Co., NC - 3" pot - 03/16

88/0106 - Chamaedaphne calyculata 'Nana' - Caro Green Nursery - Wilson, NC - 1 gal - 03/26

88/0107 - Corylopsis spicata - Coles Nursery - Furlong, PA - 3" pot - 04/05

88/0108 - Salix irrorata - Coles Nursery - Furlong, PA - 3" pot - 04/05

88/0109 - Ulmus (glabra X americana) 'Homestead' - Coles Nursery - Furlong, PA - 3" pot - 04/05

88/0110 - Juniperus virginiana 'Cupressifolia' - Coles Nursery - Furlong, PA - 3" pot - 04/05

88/0111 - Salix carprea 'Pendula' - Coles Nursery - Furlong, PA - 3" pot - 04/05

88/0112 - Tsuga chinensis - Coles Nursery - Furlong, PA - 3" pot - 04/05

88/0113 - Chamaecyparis nootkatensis 'Compacta' - Coles Nursery - Furlong, PA - 3" pot - 04/05

88/0114 - Betula ermanni - Coles Nursery - Furlong, PA - 3" pot - 04/05

88/0115 - Alnus tenuifolia - Coles Nursery - Furlong, PA - 3" pot - 04/05

88/0116 - Betula pubescens - Coles Nursery - Furlong, PA - 3" pot - 04/05

88/0117 - Pterostyrax hispida - Coles Nursery - Furlong, PA - 3" pot - 04/05

88/0118 - Viburnum carlesi 'Compacta' - Coles Nursery - Furlong, PA - 3" pot - 04/05

88/0119 - Jamesia americana - Coles Nursery - Furlong, PA - 1 qt - 04/05

88/0120 - Alnus japonica - Coles Nursery - Furlong, PA - 3" pot - 04/05

88/0121 - Sophora secundiflora - Coles Nursery - Furlong, PA - 3" pot - 04/05

88/0122 - Rosa 'Chicago Peace' - K-Mart - Raleigh, NC - BR Bush - 4/15

88/0123 - Rosa 'Chrysler Imperial' - K-Mart - Raleigh, NC - BR Bush - 4/15

88/0124 - Rosa 'Crimson Glory' - K-Mart - Raleigh, NC - BR Bush - 04/15

88/0125 - Rosa 'Love Rose' - K-Mart - Raleigh, NC - BR Bush - 04/15

88/0126 - Rosa 'Mister Lincoln' - K-Mart - Raleigh, NC - BR Bush - 04/15

88/0127 - Rosa 'Mojave' - K-Mart - Raleigh, NC - BR Bush - 04/15

88/0128 - Rosa 'Toro' - K-Mart - Raleigh, NC - BR Bush - 04/15

88/0129 - Rosa 'American Pride' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0130 - Rosa 'Angel Face' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0131 - Rosa 'Apollo' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0132 - Rosa 'Double Delight' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0133 - Rosa 'Eclipse' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0134 - Rosa 'Europeana' - Jackson & Perkins - Medford, OR - BR Bush - -4/15

88/0135 - Rosa 'First Prize' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0136 - Rosa 'French Lace' - Jackson & Perkins - Medford, OR - BR Bush - -4/15

88/0137 - Rosa 'Grand Masterpiece' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0138 - Rosa 'Interama' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0139 - Rosa 'John F. Kennedy' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0140 - Rosa 'Mirandy' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0141 - Rosa 'Oklahoma' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0142 - Rosa 'Olympiad' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0143 - Rosa 'Oregold' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0144 - Rosa 'Paradise' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0145 - Rosa 'Primadonna' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0146 - Rosa 'Razzle Dazzle' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0147 - Rosa 'Showbiz' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0148 - Rosa 'Sunfire' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0149 - Rosa 'Touch of Class' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0150 - Rosa 'Viva' - Jackson & Perkins - Medford, OR - BR Bush - 04/15

88/0151 - Aralia elata 'Silver Umbrella' - K. Sahin - Holland - 3 gal - 04/19

88/0152 - Aesculus pavia 'Atrosanguinea' - K. Sahin - Holland - 1 gal - 04/19

88/0153 - Vaccinium padifolium (Blueberry Program) - K. Sahin - Holland - 1 gal - 04/19

88/0154 - Vaccinium maderense (Blueberry Program) - K. Sahin - Holland - 1 gal - 04/19

88/0155 - Aesculus indica 'Aurea' - K. Sahin - Holland - 3 gal - 04/19

88/0156 - Vaccinium cylindraceum (Blueberry Program)- K. Sahin - Hoiland - 1 gal - 04/19

88/0157 - Vaccinium arctostaphylos (Blueberry Program) - K. Sahin - Holland - 1 gal - 04/19

88/0158 - Aralia elata 'Aureovariegatum' - K. Sahin - Holland - 3 gal - 04/19

88/0159 - Vaccinium floribundum (Blueberry Program) - K. Sahin - Holland - 1 gal. -04/19

88/0160 - Thujaopsis dolabrata 'Nana' - Washington Evergreen Nursery - Leicester, NC - 3 gal - 05/12

88/0161 - Chamaecyparis obtusa 'Fernspray Gold' - Washington Evergreen Nursery - Leicester, NC - 1 gal - 05/12

88/0162 - Chamaecyparis obtusa 'Oregon Crested' - Washington Evergreen Nursery - Leicester, NC - 1 gal - 05/12

88/0163 - Chamaecyparis obtusa 'Mariesii - Gold Type' - Washington Evergreen Nursery - Leicester, NC - 1 gal - 05/12

88/0164 - Chamaecyparis lawsoniana 'Konyn's Silver' - Washington Evergreen Nursery, Leicester, NC - 1 gal - 05/12

88/0165 - Abies sikokiana - Arnold Arboretum - Jamaica Plain, MA - 1 qt - 05/12

88/0166 - Arunus dioicus v. astilboides - Arnold Arboretum - Jamaica Plain, MA - 1 qt - 05/12

88/0167 - Gaultheria adenostrix - Arnold Arboretum - Jamaica Plain, MA - 1 qt - 05/12

88/0168 - Gaultheria miqueliana - Arnold Arboretum - Jamaica Plain, MA - 1 qt - 05/12

88/0169 - Hibiscus hamabo - Arnold Arboretum - Jamaica Plain, MA - 1 qt - 05/12

88/0170 - Rhododendron albrechtii - Arnold Arboretum - Jamaica Plain, MA - 1 qt - 05/12

88/0171 - Spirea betulifolia - Arnold Arboretum - Jamaica Plain, MA - 1 qt - 05/12

88/0172 - Tripetaleia bracteata - Arnold Arboretum - Jamaica Plain, MA - 1 qt - 05/12

88/0173 - Trachelospermum asiaticum 'Asia Minor' - Gateway Nursery - ?, FL - 1 gal - 05/18

88/0174 - Trachelospermum asiaticum 'Bronze Beauty' - Gateway Nursery - ?, FL - 1 gal - 05/18

88/0175 - Trachelospermum asiaticum 'Texas Long' - Gateway Nursery - ?, FL - 1 gal - 05/18

88/0176 - Trachelospermum asiaticum 'Long Leaf' - Gateway Nursery - ?, FL - 1 gal - 05/18

88/0177 - Trachelospermum asiaticum 'So Low' - Gateway Nursery - ?, FL - 1 gal - 05/18

88/0178 - Trachelospermum asiaticum 'Red Top' - Gateway Nursery - ?, FL - 1 gal - 05/18

88/0179 - Liquidambar orientalis/formosana? - Gateway Nursery - ?, FL - 1 qt - 05/18

88/0180 - Chamaecyparis nootkatensis 'Aurea' - Washington Evergreen Nursery - Leicester, NC - 1 gal - 05/12

88/0181 - Narcissus bulbocodium 'Conspicuous' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0182 - Narcissus canaliculatus - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0183 - Narcissus jonquilla - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0184 - Narcissus obvallaris - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0185 - Narcissus odorus 'Plenus' - DeHertogh - Raleigh, NC - Bulbs - 05/30

88/0186 - Narcissus pumilis 'Plenus' - DeHertogh - Raleigh, NC - Bulbs - 05/30

88/0187 - Narcissus telamonius 'Plenus' - DeHertogh - Raleigh, NC - Bulbs - 05/30

88/0188 - Narcissus 'Acropolis' - DeHertogh - Raleigh, NC - Bulbs - 05/30

88/0189 - Narcissus 'Amor' - DeHertogh - Raleigh, NC - Bulbs - 05/30

88/0190 - Narcissus 'Avalanche' - DeHertogh - Raleigh, NC - Bulbs - 05/30

88/0191 - Narcissus 'Baby Moon' - DeHertogh - Raleigh, NC - Bulbs - 05/30

88/0192 - Narcissus 'Ballade' - DeHertogh - Raleigh, NC - Bulbs - 05/30

88/0193 - Narcissus 'Beryl' - DeHertogh - Raleigh, NC - Bulbs - 05/30

88/0194 - Narcissus 'Bobbysoxer' - DeHertogh - Raleigh, NC - Bulbs - -5/30

88/0195 - Narcissus 'Bridal Crown' - DeHertogh - Raleigh, NC - Bulbs - -5/30

88/0196 - Narcissus 'Brighton' - DeHertogh - Raleigh, NC - Bulbs - 05/30

88/0197 - Narcissus 'Caruso' - DeHertogh - Raleigh, NC - Bulbs - -5/30

88/0198 - Narcissus 'Cassata' - DeHertogh - Raleigh, NC - Bulbs - 05/30

88/0199 - Narcissus 'Chanterelle' - DeHertogh - Raleigh, NC - Bulbs - 05/30

88/0200 - Narcissus 'Cyclops' - DeHertogh - Raleigh, NC - Bulbs - 05/30

88/0201 - Narcissus 'Delibes' - DeHertogh - Raleigh, NC - Bulbs - 05/30

88/0202 - Narcissus 'Dick Cissel' - DeHertogh - Raleigh, NC - Bulbs - -5/30

88/0203 - Narcissus 'Dutch Master' - DeHertogh - Raleigh, NC - Bulbs - -05/30

88/0204 - Narcissus 'Easter Bonnet' - DeHertogh - Raleigh, NC - Bulbs - -05/30

88/0205 - Narcissus 'Flower Record' - DeHertogh - Raleigh, NC - Bulbs - 05/30

88/0206 - Narcissus 'Foresight' - DeHertogh - Raleigh, NC - Bulbs - 05/30

88/0207 - Narcissus 'Georgia Moon' - DeHertogh - Raleigh, NC - Bulbs - -5/30

88/0208 - Narcissus 'Hawera' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0209 - Narcissus 'Ice King' - DeHertogh - Raleigh, NC - Bulbs -5/30

88/0210 - Narcissus 'Juanita' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0211 - Narcissus 'Jules Verne' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0212 - Narcissus 'Jumblie' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0213 - Narcissus 'Lintie' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0214 - Narcissus 'Little Beauty' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0215 - Narcissus 'Louise de Coligny' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0216 - Narcissus 'Mary Bohannon' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0217 - Narcissus 'Moon Orbit' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0218 - Narcissus 'Orangery' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0219 - Narcissus 'Pippit' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0220 - Narcissus 'Praga' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0221 - Narcissus 'President Carter' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0222 - Narcissus 'Red Hill' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0223 - Narcissus 'Roseanna' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0224 - Narcissus 'Rose Caprice' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0225 - Narcissus 'Roseworthy' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0226 - Narcissus 'Salome' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0227 - Narcissus 'Scarlet Gem' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0228 - Narcissus 'Sir Winston Churchill' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0229 - Narcissus 'Stadium' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0230 - Narcissus 'Sundial' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0231 - Narcissus 'Sweetness' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0232 - Narcissus 'Tahiti' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0233 - Narcissus 'Thalia' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0234 - Narcissus 'Trevithian' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0235 - Narcissus 'Trousseau' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0236 - Narcissus 'Unique' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0237 - Narcissus 'White Lion' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0238 - Narcissus 'W. P. Milner' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0240 - Narcissus 'Youth' - DeHertogh - Raleigh, NC - Bulbs - 5/30

88/0241 - Cornus florida 'Vanderwolf's Golden' - Okken Nursery - Pompton Plains, NJ - 2" pot - 06/20

88/0242 - Cornus florida 'Hohman's Gold' - Okken Nursery - Pompton Plains, NJ - 2" pot - 06/20

88/0243 - Cornus kousa 'Weaver's Weeping' - Okken Nursery - Pompton Plains, NJ - 2" pot - 06/20

88/0244 - Ginkgo biloba 'Pendula' - Okken Nursery - Pompton Plains, NJ - 2" pot - 06/20

88/0245 - Cornus kousa 'Lustgarten Weeping' - Okken Nursery - Pompton Plains, NJ - 2" pot - 06/20

88/0246 - Pinus parviflora 'Glauca' - Okken Nursery - Pompton Plains, NJ - 2" pot - 06/20

88/0247 - Abies nordmanniana 'Pendula' - Okken Nursery - Pompton Plains, NJ - 2" pot - 06/20

88/0248 - Abies lasiocarpa 'Compacta' - Okken Nursery - Pompton Plains, NJ - 2" pot - 06/20

88/0249 - Abies koreana 'Prostrate Beauty' - Okken Nursery - Pompton Plains, NJ - 2" pot - 06/20

88/0250 - Pseudotsuga menziesii 'Astro Blue' - Okken Nursery - Pompton Plains, NJ - 2" pot - 06/20

88/0251 - Picea pungens 'Thume' - Okken Nursery - Pompton Plains, NJ - 2" pot - 06/20

88/0252 - Picea pungens 'Mission Blue' - Pompton Plains, NJ - 2" pot - 06/20

88/0253 - Pinus parviflora 'Adcock's Dwarf' - Okken Nursery - Pompton Plains, NJ - 2" pot - 06/20

88/0254 - Prunus fruticosa - NCSU Peach Breeding - Raleigh, NC - 1 gal - 06/028

88/0255 - Prunus persica (Double Red Weeping-PI91459) - NCSU Peach Breeding - Raleigh, NC - Budded Standard /5' - 06/29

88/0256 - Abelia X engleriana - Savill Gardens Nursery - England - 1 gal - 06/29

88/0257 - Agapanthus campanulatus 'Albus' - Beth Chatto Nursery - England - Qt - 06/29

88/0258 - Agapanthus campanulatus 'Cobalt Blue' - Beth Chatto Nursery - England - Qt - 06/29

88/0259 - Agapanthus campanulatus 'Isis' - Beth Chatto Nursery - England - Qt - 06/29

88/0260 - Agapanthus campanulatus 'Profusion' - Beth Chatto Nursery - England - Qt - 06/29

88/0261 - Alstroemeria 'Rosy Wings' - Wisley Nursery - England - Qt - 06/29

88/0262 - Alstroemeria 'Sovereign' - Wisley Nursery - England - Qt - 06/29

88/0263 - Alstroemeria 'White Pearl' - Wisley Nursery - England - Qt - 06/29

88/0264 - Aucuba japonica 'Rozanne' - Wisley Nursery - England - 1 gal - 06/29

88/0265 - Azara microphylla 'Variegata' - Wisley Nursery - England - 1 gal - 06/29

88/0266 - Callistemon linearis - Wisley Nursery - England - 1 gal - 06/29

88/0267 - Calocedrus decurrens 'Variegata' - Bagatelle Garden - Paris, France - Cuttings - 06/29

88/0268 - Carpinus tschonoskii - Savill Gardens Nursery - England - 1 gal - 06/29

88/0269 - Celastrus loesneri - Kew Gardens - England - Cuttings - 06/29

88/0270 - Cephalotaxus fortunei 'Dragon's Plume' - Valley Gardens - England - Cuttings - 06/29

88/0271 - Cercis chinensis 'Alba' - Wisley Nursery - England - 1 gal - 06/29

88/0272 - Colchicum boissieri - Wisley Nursery - England - Bulbs - 06/29

88/0273 - Colchicum hungaricum - Wisley Nursery - England - Bulbs - 06/29

88/0274 - Colchicum luteum - Wisley Nursery - England - Bulbs - 06/29

88/0275 - Colchicum parronium - Wisley Nursery - England - Bulbs - 06/29

88/0276 - Coriaria napaulensis - Savill Gardens Nursery - England - 1 gal - 06/29

88/0277 - Cornus controversa 'Variegata' - Hilliers Nursery - England - 5 gal - 06/29

88/0278 - Cornus mas 'Elegantissima' - Savill Gardens Nursery - England - 1 gal - 06/29

88/0279 - Cornus mas 'Variegata' - Savill Gardens Nursery - England - 1 gal - 06/29

88/0280 - Cotinus coggygia 'Flame' - Hilliers Nursery - England - 1 gal - 06/29

88/0281 - Cryptomeria japonica 'Kilmacurragh' - Valley Gardens - England - Cuttings - 06/29

88/0282 - Cryptomeria japonica 'Saville Dwarf' - Valley Gardens - England - Cuttings - 06/29

88/0283 - *Cunninghamia lanceolata* 'Nana' - Valley Gardens - England - Cuttings - 06/29

88/0284 - *Cupressocyparis leylandii* 'Golconda' - Bressingham Nursery - England - 1 gal - 06/29

88/0285 - *Cupressocyparis leylandii* 'Harlequin' - Valley Gardens - England - Cuttings - 06/29

88/0286 - *Daphne mezereum* 'Album' - Savill Gardens Nursery - England - Qt - 06/29

88/0287 - *Deutzia pulchra* 'Punctata' - Kew Gardens - England - Cuttings - 06/29

88/0288 - *Dierama pendulum* 'Pumilum' - Beth Chatto Nursery - England - Qt - 06/29

88/0289 - *Enkianthus campanulata* 'Alba' - Wisley Nursery - England - 1 gal - 06/29

88/0290 - *Fothergilla monticola* 'Huntsman' - Wisley Nursery - England - 1 gal - 06/29

88/0291 - *Gaultheria wilsoniana* - Wisley Nursery - England - Qt - 06/29

88/0292 - *Gaulnettya* X *wisleyensis* 'Pink Pearl' - Savill Gardens Nursery - Qt - 06/29

88/0293 - *Gunnera magnellica* - Savill Gardens Nursery - 1 gal - 06./29

88/0294 - *Gunnera manicata* - Savill Gardens Nursery - 1 gal - 06/29

88/0295 - *Helleborus* 'Boughton Strain' - Savill Gardens Nursery - Qt - 06/29

88/0296 - *Helleborus niger* 'Potter's Wheel' - Savill Gardens Nursery - Qt - 06/29

88/0297 - *Hermodactylus tuberosus* - Beth Chatto Nursery - Qt - 06/29

88/0298 - *Hydrangea macrophylla* 'Quadricolor' - Wisley Nursery - England - 1 gal - 06/29

88/0299 - *Ilex crenata* var. *palulosa* - Valley Gardens - England - Cuttings - 06/29

88/0300 - *Ilex crenata* X *yunnanensis* - Valley Gardens - England - Cuttings - 06/29

88/0301 - *Iris foetissima* 'Citrina' - Beth Chatto Nursery - England - Qt - 06/29

88/0302 - *Iris foetissima* 'Variegata' - Beth Chatto Nursery - England - Qt - 06/29

88/0303 - *Iris japonica* 'Variegata' - Beth Chatto Nursery - England - Qt - 06/29

88/0304 - *Iris kaempferi* 'Variegata' - Beth Chatto Nursery - England - Qt - 06/29

88/0305 - *Iris lazica* - Kew Gardens - England - Divisions - 06/29

88/0306 - *Iris kaempferi* X *siberica* 'Savoir Faire' - Beth Chatto Nursery - England - Qt - 06/29

88/0307 - *Iris unguicularis* 'Cretensis' - Beth Chatto Nursery - England - Qt - 06/29

88/0308 - *Iris unguicularis* 'Francis Wormsley' - Beth Chatto Nursery - England - Qt - 06/29

88/0309 - *Iris unguicularis* 'Mary Barnard' - Beth Chatto Nursery - England - Qt - 06/29

88/0310 - *Iris unguicularis* 'Mottled' - Beth Chatto Nursery - England - QT - 06/29

88/0311 - *Jasminum officinale* 'Aureovariegata' - Savill Gardens Nursery - England - Qt - 06/29

88/0312 - *Liquidambar styraciflua* 'Gumball' - Hillier Arboretum - England - Scions - 06/29

88/0313 - *Leucothoe fontanesiana* 'Rollissonii' - Savill Gardens Nursery - England - 1 gal - 06/29

88/0314 - *Lonicera* X *purpusii* 'Winter Beauty' - Savill Gardens Nursery - England - 1 gal - 06/29

88/0315 - *Mahonia* X *media* 'Cantas' - Savill Gardens Nursery - England - 1 gal - 06/29

88/0316 - *Mahonia* X *media* 'Charity's Sister' - Savill Gardens Nursery - England - 1 gal - 06/29

88/0317 - *Mahonia* X *media* 'Hope' - Savill Gardens Nursery - England - 1 gal - 06/29

88/0318 - *Mahonia* X *media* 'Underway' - Savill Gardens Nursery - England - 1 gal - 06/29

88/0319 - *Mahonia nepaulensis* 'Maharajah' - Savill Gardens Nursery - England - 1 gal - 06/29

88/0320 - *Parthenocissus himalayana* 'Rubrifolia' - Wisley Nursery - England - 1 gal - 06/29

88/0321 - *Periploca graeca* - Kew Gardens - England - Cuttings - 06/29

88/0322 - *Phillyrea decora* - Savill Gardens Nursery - England - 1 gal - 06/29

88/0323 - *Photinia glabra* 'Variegata' - Bressingham Gardens Nursery - England - 1 gal - 06/29

88/0324 - *Phytolacca clavica* - Beth Chatto Nursery - England - Qt - 06/29

88/0325 - *Pieris japonica* 'Flaming Silver' - Wisley Nursery - England - 1 gal - 06/29

88/0326 - *Pieris japonica* 'Little Heath' - Wisley Nursery - England - 1 gal - 06/29

88/0327 - *Pieris japonica* 'Little Heathgreen' - Wisley Nursery - England - 1 gal - 06/29

88/0328 - *Pieris japonica* 'Minor' - Wisley Nursery - England - 1 gal - 06/29

88/0329 - *Pieris japonica* 'Prelude' - Wisley Nursery - England - 1 gal - 06/29

88/0330 - *Prunus lusitanica* 'Variegata' - Wisley Nursery - England - 1 gal - 06/29

88/0331 - *Rhododendron maximum* X *Kalmia latifolia* - Hillier Arboretum - England - Cuttings - 06/29

88/0332 - *Rhus glabra* 'Lacinata' - Wisley Nursery - England - 1 gal - 06/29

88/0333 - *Rhus verniciflua* (TOXIC) - Wisley Nursery - England - 1 gal - 06/29

88/0334 - *Schisandra grandiflora* 'Rubiflora' - Wisley Nursery - England - 1 gal - 06/29

88/0335 - *Schizofragma integrifolia* - Wisley Nursery - England - 1 gal - 06/29

88/0336 - *Sisyrinchium striatum* 'Variegatum' - Beth Chatto Nursery - England - 1 gal - 06/29

88/0337 - *Skimmia japonica* 'Bowl's Dwarf Male' - Savill Gardens Nursery - England - 1 gal - 06/29

88/0338 - *Skimmia japonica* 'Rubella' - Savill Gardens Nursery - England - 1 gal - 06/29

88/0339 - *Stachyurus praecox* 'Magpie' - Hillier Arboretum - England - Cuttings - 06/29

88/0340 - *Stephandra tanakae* - Wisley Nursery - England - 1 gal - 06/29

88/0341 - *Styrax hemsleyana* - Wisley Nursery - England - 1 gal - 06/29

88/0342 - *Tetracentron sinensis* (2) - Wisley Nursery - England - 1 gal - 06/29

88/0343 - *Tsuga yunnanensis* - Savill Gardens Nursery - 1 gal - 06/29

88/0344 - *Viburnum farreri* 'Candidissima' - Savill Gardens Nursery - 1 gal - 06/29

88/0345 - *Viburnum henryi* - Savill Gardens Nursery - 1 gal - 06/29

88/0346 - *Viburnum* (Unknown Species) 'Variegata' - Bagatelle Gardens - Paris, France - 06/29

88/0347 - *Weigela florida* 'Versicolor' - Hillier Nursery - England - 1 gal - 06/29

88/0348 - *Weigela* X 'Dart's Colouredream' - Bressingham Gardens Nursery - England - 1 gal - 06/29

88/0349 - *Weigela* X 'Looymansii Aurea' - Beth Chatto Nursery - England - 1 gal - 06/29

88/0350 - *Weigela* X 'Rubidor' - Bressingham Gardens Nursery - England - 1 gal - 06/29

88/0351 - *Vinca minor* 'Alba Variegata' - Great Dixter Nursery - England - Division - 06/29

88/0352 - *Cercis silaquastrum* 'Bodnant' - Hillier Arboretum - England - Scions - 06/29

88/0353 - *Liquidambar styraciflua* 'Midwest Sunset' - ? - ? - Scions - 06/29

88/0354 - *Magnolia fraseri* - Stephans/Perry - Wilkes Co., NC - Seed - 06/29

88/0355 - *Ilex crenata* 'Golden Girl' - Rich Hartlage - Raleigh, NC - 3" pot - 06/29

88/0356 - *Ilex opaca* 'Morden's Gold' - Rich Hartlage - Raleigh, NC - 3" pot - 06/29

88/0357 - *Widdringtonia cupressoides* (3) - Atlanta Bot Garden (Zomba Plateau, Malawi Seed) - Atlanta, GA - Qt - 06/29

88/0358 - *Magnolia* X 'Peter Smithers' - Tom Krenitsky (Louisiana Nursery) - Chapel Hill, NC - 5 gal - 06/29

88/0359 - Aucuba japonica 'Rotundifolia Nana' - Tom Krenitsky (Wisley Nursery) - Chapel Hill, NC - 1 gal - 06/29

88/0360 - Taxodium distichum 'Monarch of Illinois' - Bernheim Forest Arb - Clermont, KY - Scions - 06/30

88/0361 - Taxodium distichum 'Shawnee Brave' - Bernheim Forest Arb - Clermont, KY - Scions - 06/30

88/0362 - Taxodium distichum 'Pendens' - Bernheim Forest Arb - Clermont, KY - Scions - 06/30

88/0363 - Taxodium ascendens - Bernheim Forest Arb - Clermont, KY - Scions - 06/30

88/0364 - Taxodium ascendens 'Prairie Sentinal' - Bernheim Forest Arb - Clermont, KY - Scions - 06/30

88/0365 - Taxodium ascendens 'Morris Arboretum' - Bernheim Forest Arb - Clermont, KY - Scions - 06/30

88/0366 - Carpinus betulus 'Quercifolia' - Bernheim Forest Arb - Clermont, KY - Scions - 06/30

88/0367 - Carpinus betulus 'Globosa' - Bernheim Forest Arb - Clermont, KY - Scions - 06/30

88/0368 - Cercis canadensis 'Silver Cloud' - Bernheim Forest Arb - Clermont, KY - Scions - 06/30

88/0369 - Cercis canadensis 'Alba' - NCSU Campus - Raleigh, NC - Scions - 06/30

88/0370 - Cercis canadensis 'Flame'/'Plena' - Woodlanders Nursery - Aiken, SC - Scions - 06/30

88/0371 - Cornus florida 'Fayetteville Columnar' - Wild Tree - Fayetteville, NC - Cuttings - 06/30