

JC Raulston Arboretum

Friends of the Arboretum Newsletter

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J. C. Raulston

Contents Page

- [Notes From The Arboretum](#)
- [Plants Distributed to Nurserymen - 1995 NCAN Summer Short Course](#)
- [Cephalotaxus Evaluations in The NCSU Arboretum \(now the JC Raulston Arboretum\)](#)
- [The NCSU Arboretum \(now the JC Raulston Arboretum\) Evaluation of Southwestern U.S. and Mexico Native Plants](#)
- [Book News](#)
- [Plant Sources News](#)

Notes from the Arboretum

Too many months since the last newsletter, thankfully Tom Foley has kept information flowing to our membership through his regular Updates. So much to cover and say - each day in the life of the arboretum brings new observations and experiences, people and institutional contacts, challenges and opportunities, changes. Three major organizational interactions since the last newsletter in October are worthy of mention. The fall brought our "once in a lifetime" opportunity to host (with SNA and NCAN) the Southern Plant Conference which travels from state to state through the southeast U.S. every other year - our once in 32 years chance. Great meeting with lots of excitement from participants from across the U.S. - outstanding speakers, and a thrill to share the arboretum collections with the visitors. Many fine new connections to share plants for commercial production developed from the meeting - always our goal.

In the December Update a brief notice about the fall visit of a group of Japanese nurserymen, and a subsequent visit by me to Japan to address a national nursery conference there about the plants and programs of The NCSU Arboretum (now the JC Raulston Arboretum) gave an erroneous impression that needs correction. The article unfortunately implied that it was knowledge and fame of the arboretum which brought the nurserymen to us - in reality it was only through the very active involvement of Mr. Barry Yinger that they knew of us at all, and eventually were convinced that they should visit our program as one of many seen while in the U.S.. Barry is today one of the key players in world horticultural circles (see The Collector's Garden - book review section to follow) and has been an essential part of The NCSU Arboretum (now the JC Raulston Arboretum) program at every stage continually for the last 15 years - sharing philosophical advice on institutional concepts and goals, and plants from his programs at Brookside Gardens, the U.S. National Arboretum, the Leonard Buck Garden, and his own personal garden. It was only through his efforts that we were involved in the 1985 U.S. National Arboretum Korean expedition which resulted in so many introductions from our programs from the germplasm collected there. Later he was chair of our National Board of Advisors, and more recently has brought in significant corporate financial support to help our program. A lifetime of developing professional plantsmen and nursery contacts throughout Japan gave him the opportunity to proselytize on our behalf there to convince the Japanese to visit us and support our efforts - without his efforts it would not have happened and we are deeply appreciate of this support - and all the rest through so many years. We apologize for our oversight, and thank you for all you do Barry. If I can ever get my writing life in gear (and from decades of experience - you readers know how likely that is!) - I hope sometime to do a newsletter article travellog similar to the European sabbatical about this trip to Japan, Singapore, Hong Kong, Zurich and London - we'll see (sure, sure).

At any rate - the third event was the hosting of the International Dendrology Society as a small part of an overall visit of this group to the Eastern U.S. with their main meeting in Asheville, NC. We appreciate the efforts of John Palmer, conference coordinator, in including us in the rather amazing (and exhausting!) pre and post meeting tour itinerary of this distinguished international organization. The organization is comprised of passionate and knowledgeable distinguished plantsmen from around the globe who focus on fine trees - and the pursuit of them through many meetings and tours worldwide. This was their first visit to N.C. in many decades - again a once in a lifetime opportunity.

We had an hour and a half to share the 5,000 taxa of the arboretum with them - and it was a sprint to do so. What do you show world plantsmen who have been everywhere and seen everything? - who often own their own arboreta and have huge estates? We tried to focus on the exceptional and/or unique plants which they would likely have not seen elsewhere in their travels - the record trees, the

NCSU Arboretum (now the JC Raulston Arboretum) introductions, and plants which are likely not in overseas collections - in short, the plants that most uniquely define us. The "core plants" of this tour (along with hundreds of others pointed at wildly as we sailed by) included the following (in the order viewed):

- *Cercis canadensis* ssp. *texensis* 'Oklahoma' - glossy foliage and darkest color flowers of any redbud.
- *Cercis canadensis* ssp. *mexicana* - small glossy foliage and undulate edges.
- *Albizia coreana* - native to Korea, almost extinct in the wild; extremely rare in cultivation - showy cream flowers in summer
- *Acer palmatum* 'Atropurpureum Dissectum' - oldest "planted" tree in arboretum - est. 90 years - moved from an old estate.
- *Melia azedarach* 'Jade Snowflake' - variegated foliage - named and introduced by The NCSU Arboretum (now the JC Raulston Arboretum).
- *Nandina domestica* collection - possibly largest in world - over 45 named types.
- *Cupressus glabra* 'Carolina Sapphire' - fastest growing of conifers - 6' per year; blue-grey foliage; Clemson introduction.
- *Euscaphis japonica* - Korea collection; white and purple winter bark with spectacular red and black fruit in fall.
- *Rhapidophyllum hystrix* - "Needle palm" - southeastern U.S. native species; possibly the hardiest palm to -20F.
- *Stewartia rostrata* - uncommon species with showy buds before opening pink tinged ephemeral flowers.
- *Calycanthus floridus* 'Athens' - chartreuse yellow flowered Dirr introduction cultivar.
- *Pinus taeda* 'Nana' - "Dwarf Loblolly pines" - slower growing forms of native tree from witches brooms - 45 years old.
- *Magnolia* collection - about 200 species and cultivars. *M. grandiflora* 'Little Gem' - N.C. origination - not dwarf!
- *Ulmus alata* 'Lace Parasol' - dwarf weeping selection of the native "winged elm", the original tree - 45 years old.
- *Ternstroemia gymnanthera* 'Burnished Gold' - NCSU Arboretum (now the JC Raulston Arboretum) introduction - but not in commercial trade yet.
- *Cunninghamia lanceolata* 'Chason's Gift' - Johnson Nursery selection which grows upright with central leader; dense.
- *Magnolia tamaulipana* (*M. sheidiana*) - new evergreen species from Mexico proving hardy here.
- *Magnolia grandiflora* 'Hasse' - outstanding columnar form of great merit but difficult to propagate.
- *Magnolia virginiana* 'Dodd's Dwarf' - the only truly dwarf magnolia, good for patio container use.
- *Betula nigra* 'Improved Heritage' - the original parent tree of this patented U.S. birch selection now in commercial use.
- *Halesia diptera* var. *magniflora* - the showiest of Silverbells with large flowers; in great demand.
- *Lagerstroemia fauriei* 'Townhouse' - NCSU Arboretum (now the JC Raulston Arboretum) introduction; parent tree; darkest red bark of the crepe myrtles.
- *Manglieta yunnanensis* - magnolia relative with excellent foliage, form, and showy flowers with red stamens.
- *Styrax youngae* - discovered in Texas in 1914 and lost for 80 years; thought extinct till recently. Shrub with white flrs.
- *Bignonia capreolata* 'Tangerine Beauty' - NCSU Arboretum (now the JC Raulston Arboretum) introduction; evergreen native vine with tangerine flowers.
- *Sinocalycanthus sinensis* - recent introduction to cultivation from China via UBC Botanic Garden. White flowers.
- *Wisteria macrostachys* 'Clara Mack' - new white flowered cultivar of "Kentucky wisteria" - outstanding late flowering plant.
- *Wisteria frutescens* 'Amethyst Falls' - new pale blue cultivar of the other American wisteria species.
- *Lagerstroemia fauriei* 'Fantasy' - record specimen of this species; NCSU Arboretum (now the JC Raulston Arboretum) cultivar - white flowers; red bark.
- *Cercis* collection - first time in history all redbud species have been grown in one garden at one time.
- *Cercis gigantea* - largest of all redbuds; big tree; big foliage; unimpressive flowers unfortunately.
- *Cercis canadensis* 'Silver Cloud' - white variegated foliage.
- *Platanus occidentalis* 'Howard' - N.C. patented selection of golden foliaged sycamore; likely not overseas yet.
- *Photinia villosa* 'Village Shade' - NCSU Arboretum (now the JC Raulston Arboretum) introduction; outstanding small tree - white flowers, red fruit.
- *Ilex* X 'Mary Nell' - new U.S. holly of great merit; easy and fast.
- *Melia toosendens* - new species of "Chinaberry" from Asia - pale blue flowers; white fruit in winter.
- *Keteleeria davidiana* - uncommon conifer from China.
- *Stranvaesia amphidoxa* - rare species of small tree from China; outstanding showy red fruit in fall and winter.

We also hosted the group for a dinner the evening they were here - a daunting prospect as these people travel absolutely first class everywhere in the world - the finest restaurants, food, entertainment (how do you follow a huge formal banquet in the Biltmore house?). So we did "down home informal N.C. comfortable" - dinner balanced on knees at my home - with a "do-it-yourself" Raulston banana split assembly party (see cookbook - new books section to follow) - unique to this group's experience certainly. My most lasting memory of the entire IDS experience is of Lady X squirting a can of pressurized whipped cream at Lord Y and Viscount Z and giggling like a teenager! A grand group to meet - a pleasure.

1996 has been a unique year of pressure with a six month vacancy in the technician position for the first time since the arboretum began - and the pressures of building The Necessary, the Paradise Garden, the Labyrinth during the period. Tom Foley has borne the primary brunt of this heavy load with incredible hours in the garden to bring it all about. And it continues with building of a new propagation greenhouse (recently funded with a \$9,200 grant from the North Carolina Association of Nurserymen - detailed story in the next Update this fall) to more efficiently produce much larger quantities of plants for our distribution program; and a major redevelopment of the entrance to the arboretum in the White Garden (again - details later) to start soon. Having Mitzi Hole on board as the new technician will

relieve some stress - but the loss of Tom with some months before a new Assistant Director is hired will offset that for awhile. Thank heavens for our wonderful student workers - Karen Jones, Richard Olson, and Ian Simpkins who have been so invaluable during this time.

On a personal note - it has been a unique "readjustment" year for me as well. 1995 was some kind of burnout overload year - out of the state some 43 weeks of the year and an average of 3 nights a week at home; too much lecturing, too much fundraising, too much teaching, too much too much. 1996 was/is to be a year of less everything in every category - with a vow of not boarding a plane or crossing a state line this year (talk about total withdrawal programs!) - and so far have kept to that in spite of so many wonderful opportunities to go to do so many fascinating things everywhere. (A discarded goal of shifting from 100 hour weeks to 40 hour weeks proved to be a pure fantasy - but at least reduced). One unusual category of the "less year" currently startling people is encountering the look of my totally hairless shaved head!

We have a goal to "get things in order" this year at the arboretum - with an overall basic objective to simply "know what we have in the collection, and where it is." Sounds so simple and logical - but a very long journey to get there. We've been working hard for months on both arboretum and nursery collections - discarding and chainsawing the unknown plants we no longer have an identity on - chipping mountains of pruned brush; planting out as many things from the nursery as possible; mapping the collection and getting records in our computers with monumental efforts of Val Tyson on the computer and the endless work of the grounds mapping and labeling crew volunteers, Tom Bumgarner, Prep Maynard, and John Scott. We have finally abandoned our previous computer records program that did not work effectively, and Val and Dr. Arthur Kelley are "inventing/developing" a completely new system which looks to be superior to any other existing system in public gardens use in the U.S. today (BG-Base is now the national "standard" - but we haven't had the staff or money to get/use it). All of this is mostly invisible to the public - but critical to our managing the garden and making it useful for our research and audience use. Huge progress has been made and we're excited about that. We've been more weedy than usual this summer, and we apologize for that and ask you to bear with us until we're fully staffed and things are under more control again this winter - an exciting new arboretum is under pretty major redevelopment.

As a last note - perhaps the most exciting moment of The NCSU Arboretum (now the JC Raulston Arboretum) year has been a truly unique "plant experience" (appropriately so, with our focus on plants, not paving) with our first flowering of a new plant which has not previously existed in nature. We have been noted (unfortunately) for our work with Leyland Cypress, *X Cupressocyparis leylandii* - a cultivation origin plant created first in England with the crossing of two different genera - *Cupressus* and *Chamaecyparis* - termed a bigeneric hybrid. Such bigeneric cross plants do occur rarely in nature, and have at times also been artificially created in the horticultural field - e.g.: *X Mahoberberis* from *Mahonia X Berberis*; *X Fatzhedera* from *Fatsia X Hedera*; *X Solidaster* from *Solidago X Aster*, etc.

The NCSU Arboretum (now the JC Raulston Arboretum) can now proudly announce a new such hybrid created for the first time with a cross of the southeastern U.S. native Sweetshrub, *Calycanthus floridus* and the newly introduced genus from China called *Sinocalycanthus chinensis*. The cross was made a few years ago by our undergraduate student, Richard Hartlage, while he was working at the arboretum. Many of you know him from his dramatic floral arrangements made for our arboretum events, his design workshops, and fine lectures - Richard is now Director of the Elisabeth Miller Botanical Garden in Seattle, WA. One day we were looking at the two plant species flowering in the west arboretum and I said that although the flowers were so very dramatically different (broad white petals vs. narrow maroon petals), the fruit are so virtually identical as to be almost impossible to separate visually - and that it seemed possible they might conceivably be crossed. So Richard took it on as a curiosity project - and made reciprocal crosses using the two parents.

From his trials, only one seed pod eventually developed - on the *Sinocalycanthus* parent, and this yielded 6 seeds which all germinated readily after stratification. The young plants were grown on, with 2 eventually dying (from cultural stress). Of the remaining 4 plants - 3 looked identical to the *Sinocalycanthus* parent - but the other one seemed more intermediate in foliage characteristics between the two parents, and also intermediate in growth habit and environmental tolerance. (*Calycanthus* is full sun tolerant; *Sinocalycanthus* is much happier in light shade).

This spring the plant finally flowered - with daily eager watching the buds develop and unfold during the week of April 23 - and finally on April 30 the first flower was fully open - and it was indeed an intermediate hybrid - with flowers of maroon petals about half way in shape between the two parents and flowering midseason between them. Most observers have felt the flowers are quite spectacular, and it has created considerable excitement as word has spread in very limited plantsmen circles (the IDS tour group went beserk, crowding and pushing to get photographs like rock star paparazzi!). We will be working to formally publish a full description and further information in a "real, legitimate" horticultural publication - but felt it would be good to share the news here as soon as possible with our membership who make all the arboretum does possible with their support. We look forward to the day when we can then share plants of this exciting new plant as well throughout the plant world. The name? Well that is yet to be determined - generally bigenerics are named from the first half of one genera name with the second half of the other and preceded by an X - perhaps *X Calysinocalycanthus* or *X Sinocalycalyanthus* (or since some botanists consider them both species of the same genus - *Calycanthus*, we may lose the "bigeneric honor" and "just" have a *Calycanthus* hybrid) - either one being a tongue twister.

And one last "back to reality" note - no matter the plants, the programs, the goals, the politics of gardens - nature still constantly slaps at all gardeners to keep their full attention. We're newly learning what people around us have been talking about all these years with their vole problems - miniature beavers wired for total destruction. New to us and what a nightmare! Those spaceships in Independence Day have nothing on the power of these beasts! Happy gardening. jcr

PLANTS DISTRIBUTED TO NURSERYMEN - 1995 NCAN SUMMER SHORT COURSE

NCAN Short Course and Trade Fair - Asheville, NC - August 26-27, 1995.

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 NCAN summer short course as a means of spreading new or uncommon plants through the state for trial observation and possible commercial production. This program has been underway since 1980 and ca. 67,000 plants of 350 different species and cultivars have been given to growers in the past sixteen years since its inception.

Selection of plants is based on ability of the plant to be propagated when the Department of Horticultural Science propagation benches are empty, adequate size of stock plants in the arboretum 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 for adaptation study or hobbyist collector-type items. The plants provided for growers represent just a small sample of the 5,000 species and cultivars presently growing in The NCSU Arboretum (now the JC Raulston Arboretum).

Commercial growers are most welcome at any time to come to the arboretum to collect propagation material to provide stock plants for their operations. We do request that nurserymen who are collecting cuttings from the arboretum for the first time make an appointment (call 919-515-1192 for J. C. Raulston, 515-5361 for Tom Foley, or 515-7641 for Mitzi Hole) to coordinate which materials may be collected and our general guidelines for collection procedures. Dozens of growers now gather many hundreds of thousands of cuttings annually in this manner.

A reference propagation manual was written in 1993, with periodic updates since, and is now available at the arboretum office for use by visiting growers. It lists every plant in the arboretum and gives information on when each should be propagated and the recommended method to be used. Please, please use this manual for information - we recently had the unfortunate experience of a nurserymen taking all possible cuttings of all our plants of a very valuable cultivar at a time they absolutely cannot be propagated (as indicated in the manual) - thus totally wasting an entire year's potential "crop". (Also - please never harvest such large quantities - not over 10% of the cuttings on a given plant so others can also share - and so we can see what the plant looks like).

We very much appreciate the long, diligent efforts of a whole team of Friends of The NCSU Arboretum (now the JC Raulston Arboretum) Volunteers who spent a full week individually labeling, wrapping, and bagging the 6,000 plants in this year's distribution. Many, many thanks to all who have helped in this process, and especially to Rosanna Adams, Mary Edith Alexander, Anna Berry, Ann Bloom, Wayne Brooke, Harvey Bumgardner, Tom Bumgarner, Ann Clapp, Mary and Claude Caldwell, Diane Clinton, Genelle Dail, Vivian Finklestein, Peg Fisher, Dollie Glaum, Amelia Lane, Prep Maynard, Doris Mills, Ray Noggle, Charlotte Presley, John Schott, Lisa Stroud, Bee Weddington and Ginny Welton for your incredible help.

THE 1995 PLANTS

- 9501 *Acer campestre* L. 'Compactum' - "Dwarf Hedge Maple" (Aceraceae). A small to medium sized deciduous maple tree native from England across Europe to Western Asia. They have deeply cut, handsome leaves which usually turn yellow in autumn. Several cultivars have been selected including this dwarf form which was found in 1893. It is extremely dense in growth making a solid ball of foliage in a roughly globe form. The tree at The NCSU Arboretum (now the JC Raulston Arboretum) (front of the main offices by Beryl Road) is now about 5' in diameter with some 4-7" growth per year. It can be propagated by budding or grafting on understock at some height to form a "standard", or softwood cuttings will root readily (as we have done for this distribution). More a collector plant than mainstream commercial crop. Likely adaptable for use in USDA Zones 5-8.
- 9502 *Arisaema heterophyllum* Bl. - "Japanese Jack-in-the-Pulpit" (Araceae). An Asian counterpart to the American "Jack-in-the-Pulpit" with exotically shaped, greenish to purplish spathe and spadix flowers. They tend to emerge early in spring, flower, set seed, and then die down in summer or fall. Propagation is by division of clumps, or by seed when both male and female flowers are present for pollination (a complicated business in this genus - with some species changing the sex of the plant in succeeding years) and the large fruit are harvested before the seed are dispersed. Seed germinate readily, generally send up a single leaf, produce a small corm and go dormant, with subsequent further growth after a cold dormancy period. Tony Avent has found that a relatively short period of cold in refrigeration storage is all that is necessary to break dormancy and several flushes of growth a year can be achieved to speed production. The genus is in great demand at present and many *Arisaema* are very marketable. Well adapted for growth anywhere in N.C. and likely adaptable for use in USDA Zones 5-8. Our various species are located in the lathhouse.
- 9503 *Buddleja lindleyana* Fortune - "Lindley's Butterfly Bush" (Loganiaceae). A deciduous shrub native to Japan and China which was introduced to the west by Fortune in 1843. After introduction to the southeastern U.S. it became naturalized and can often be found on old farmsteads and along roads in older cultivated areas. (Our plant came from a sample a county agent sent for identification as a "pasture weed" - and we rooted the sample and added it to our collection). It is a mid-sized shrub to 6-8' in height with uniquely attractive long, slender, curved racemes of purple-violet flowers which bloom for a very long time though the summer. It is quite different in appearance from other *Buddleja* species and is deserving of greater garden use. Exceptionally easy to propagate from either seed or softwood cuttings. Located in the east arboretum in the *Viburnum* and *Stewartia* collections. Likely adaptable for use in USDA Zones 6-9.

- 9504 *Buxus sempervirens* L. 'Vardar Valley' - "Vardar Valley Boxwood" (Buxaceae). Boxwood is a broadleaved evergreen shrub native to southern and eastern Europe and northern Africa which has been cultivated for thousands of years in Europe. There are innumerable cultivars of widely varying characteristics (check the American Boxwood Society, Box 85, Boyce, VA 22620 - 703-939-4646). This cultivar was collected by Dr. John Creech of the U.S. National Arboretum from wild plants in Vardar Valley in the Balkans Mountains and is distinguished by its compact growth, dark green foliage, and exceptional hardiness. Like all boxwoods it is easy to propagate at almost any time of year. Located in the Southall Garden west of the main farm building next to Beryl Road. Adapted for use in USDA Zones 5-9.
- 9505 *Callicarpa americana* L. var. *lactea* - "White American Beautyberry" (Verbenaceae). The white fruited form of the American beautyberry - a deciduous shrub which grows to 4-7' in height. It has the largest leaves of any of the beautyberries with heavy pubescence and pale color. Flowers appear at the axil of each leaf pair in summer, and the large fruits cover the branches heavily through the summer until they turn white in fall. In full sun and moisture stress the white fruit can scorch to brown and lose their effectiveness earlier than in a woodland setting of partial shade. Extremely easy from softwood cuttings all summer, or will come true from seed which requires cold stratification. In the west arboretum at the edge of the proposed education building "footprint". Likely adaptable for use in USDA Zones 6-10. A very useful reference article on beautyberries was recently written by Jenks Farmer of the Riverbanks Botanic Garden, Columbia, SC and published in the February 1, 1995 issue of American Nurseryman.
- 9506 *Camellia hiemalis* Thunb. 'Shishi-Gashira' - "Shishi-Gashira Camellia" (Theaceae). Camellias are among the most widely grown evergreen shrubs of the south with innumerable cultivars producing flowers of white, pink, red, and lavender. This very popular cultivar is summarized by the Sunset Western Garden Book as follows: "one of the most useful and ornamental shrubs. Low growing with arching branches that in time pile up tier on tier to make a compact, dark green, glossy-leafed plant. Leaves are rather small for camellia, giving medium-fine foliage texture. Flowers rose-red, semidouble to double, heavily borne over long season of October-March. Full sun or shade. Very easy from semi-hardwood to hardwood cuttings at most any time of year. Likely adaptable for use in USDA Zones 7-9. Our old plant was located adjacent to the parking lot near the visitor center, but this spring we removed it for better viewing of the specimen *Camellia oleifera* in that area - but large quantities of cuttings were rooted and will be included in our fall distributions.
- 9507 *Caryopteris incana* (Houtt.) Miq. - "Autumn Blue Spirea" (Verbenaceae). A deciduous shrub in mild areas, or a herbaceous perennial in colder regions. Native to Japan, Korea, China and Taiwan and introduced to western cultivation in 1844. It is little grown in gardens and is best known as a parent of the widely grown *C. X clandonensis* cultivars resulting from crosses of *C. incana* X *C. mongolica*. It has been spectacularly beautiful at The NCSU Arboretum (now the JC Raulston Arboretum) (in the perennial border, and in front of the lath house), coming into flower in autumn with the deepest and most beautiful blue flowers seen in this genus. It reaches 2-3' with us. Extremely easy from softwood cuttings all summer and rapid growing. Has good potential for container production as a sideline autumn crop in blue color with all the yellows and golds of mum flowers. Likely adaptable for use in USDA Zones 6-9.
- 9508 *Caryopteris X clandonensis* Simmonds 'Worcester Gold' - "Worcester Gold Blue Spirea" (Verbenaceae). One of the newer of the blue spirea cultivars from the cross discussed above; recently introduced in England for its golden foliage which contrasts with the lacy blue flowers produced through the summer. The *C. X clandonensis* plants are not as good or dependable in USDA Zones 7-8 as they are further north - and require both good drainage and ample moisture to perform well. They can die easily and quickly in hot water-logged clay soils in summer and are at their best in Zones 5-6. Extremely easy from softwood cuttings all summer and fast growing in commercial container production - a very fast and profitable crop. The color combination of blue and gold is more appealing than I would have thought. In the northeast corner of the arboretum in the "Blue and Gold Garden" and a fine plant is near the east entrance to the Certified Plantsman Collection in the Mixed Border.
- 9509 *Cephalotaxus harringtonia* var. *koreana* Nakai - "Korean Plum Yew" (Cephalotaxaceae). The "Plum Yews" are receiving great publicity and strong recommendations for greater use (Pennsylvania Hort. Society Gold Medal Awards; Georgia Gold Medal Winners, etc.) - and deservedly so. They can grow in hot or cold climates, under wet or dry conditions, in full sun or shade, have essentially no pests and very importantly today - are deer proof. This group was reviewed beautifully in a recent issue of American Nurseryman (November 1, 1994:32-37) by Dr. Kim Tripp, Putnam Fellow of the Arnold Arboretum of Harvard University, in an article "A Plum Yew Primer". In this comprehensive detailed article, she states: "to my eye, this (the Korean Plum Yew) is *the* most ornamental species." The cuttings being distributed (rooting 90%+ with winter hardwood cuttings) came from plants we grew from seed collected in Korea on the 1985 expedition with the U.S. National Arboretum. In Korea they are fast-growing, tree form plants. Excellent commercial potential. Likely adaptable for use in USDA Zones 5-9. Our plant in the lathhouse - but heavily stubbed at the moment and not impressive by any means.
- 9510 *Chamaecyparis thyoides* (L.) B.S.P. - "Atlantic White Cedar; White Cypress" (Cupressaceae). A native N. C. conifer tree once making up vast forests in the coastal plain swamps with majestic trees. Most of these have been lumbered and are rarely seen at their size potential. A number of horticultural cultivars have been selected and one,

'Red Star' has become widely produced and sold in recent years in N.C. The species is rarely grown commercially, but a large market is developing for seedlings for habitat restoration in coastal areas (assuming that as politics are going at present - if *any* environmental concern among lawmakers still exists within five years). Plants do best in highly acid areas with ample water; and are best in full sun though tolerating light deciduous shade. The species is grown from seed with cold stratification, and cultivars can be rooted from semi-hardwood cuttings under mist relatively easily. Likely adaptable for use in USDA Zones 3-8. Our plants at the northeast corner of the east arboretum.

- 9511 *Euscaphis japonica* (Thunb.) Kuntz - "Euscaphis" (Staphylaceae). A deciduous tree to 30' from Japan, China and Korea of great beauty with multi-season interest. The compound foliage is glossy and handsome all summer; fruiting panicles up to a foot

in diameter are produced with red fleshy pulp highlighted by shiny black seeds that are showy for 3-4 months in late summer and fall, and in the winter the bark is deep purple with white striping. They have grown well in our poorly drained clay nursery field and seem extremely stress tolerant.

Cuttings can be rooted from softwood growth but have proven hard to keep alive through the first winter. Ample seed is now being produced by trees in The NCSU Arboretum (now the JC Raulston Arboretum) nursery. They seem to have double dormancy - requiring a cold period, followed by a warm period, and a second cold period before germinating in high percentages. We have also had more than average difficulty in transplanting and establishing young seedlings - with a very high damping off rate on seedling transplants.

The plants are spectacularly beautiful and have commercial potential - but it will take time to develop seed blocks, and master the varied cultural requirements to get the crop to market. Likely adaptable for use in USDA Zones 6-9. Our best plants are unfortunately in the field nursery out of public view, and unfortunately the plant in the east arboretum (Hamamelis collection area near the Crepe Myrtles) is not as showy in fruit as many are. If one is visiting Wilmington, it is worth a trip to the New Hanover County Arboretum to see their very fine plants in the fall.

- 9512 *Forysthia X intermedia* Zab. 'Tremonia' - "Tremonia Forsythia" (Oleaceae). A distinctive forsythia with very deeply toothed leaves for an appealing foliage textural interest in summer. It is a seedling of *F. X 'Beatrix Farrand'* which was raised at the Dortmund Botanic Garden in Germany in 1963, and later introduced to the U.S. by the Arnold Arboretum. A smaller and more compact plant than many forysthias with large, pale yellow flowers on a deciduous shrub. Extremely easy to propagate from softwood through hardwood cuttings and fast growing for good commercial characteristics. Our plant is at the southeastern corner of the arboretum near the circular "red cedar gazebo" being developed. Likely adaptable for use in USDA Zones 4-9.
- 9513 *Ilex vomitoria* Ait. 'Virginia Dare' - "Virginia Dare Yaupon Holly" (Aquifoliaceae). The yaupon holly is a broadleaved evergreen tree native to the southeastern U.S. from Virginia to Texas with many selected cultivars grown as ornamental crops. It is an extremely stress tolerant species growing successfully in a wide variety of habitats with great drought and salt tolerance. The most commonly used commercial forms are the compact "green meatballs" - but other growth forms exist such as the weeping *I. vomitoria* 'Pendula' and the tightly fastigate 'Will Fleming' (distributed here last year). This cultivar was selected in eastern N.C. for its unusual orange colored fruit in winter. Relatively easy from semi-hardwood to hardwood cuttings. Best in sun but tolerates light deciduous shade. Likely adaptable for use in USDA Zones 6-9. Our plant at the northwest corner of the arboretum parking lot.
- 9514 *Iris siberica* L. 'Little White' - "Little White Siberian Iris" (Iridaceae). The "Siberian Irises" are native to central Europe through Asia and are widely grown as tough and beautiful herbaceous perennials for early summer bloom in gardens with thousands of cultivars in varied flower colors. This cultivar is different from most in its compact growth habit - the foliage rarely reaching over a foot in height with the white flowers appearing within that range. Propagated by clump division. Best in sun and likely adaptable for use in USDA Zones 4-9. Our clumps in the perennial border and in the west arboretum on the way down to the redbud collection.
- 9515 *Keteeleria davidiana* (Bertrand) Beissner - "Keteeleria" (Pinaceae). An extremely rare conifer genus from China with two species; this one discovered by David in 1869 and introduced to western cultivation by Fortune in 1888. It is rarely seen in American collections and few fruiting specimens exist in the U.S. (the only one I've seen is at Western Hills Nursery, Occidental, CA). This plant has grown exceptionally well at The NCSU Arboretum (now the JC Raulston Arboretum) (in the west arboretum just below the Japanese garden) and is now 18' tall and growing 3'+ per year. It appears to have enormous potential as a specimen tree, as a plant for shearing for hedges, and for Christmas tree use. It has sharp, stiff pointed needles like some of the firs, but they are displayed around the stem like some of the hemlocks. In absence of a seed source, vegetative propagation is necessary for potential commercial success, and over the last two years we have learned that they can be successfully propagated from hardwood cuttings in high percentages (90%+). Cuttings typically first produce a single fleshy root which has very fragile attachment to the cutting base - making it almost impossible to pull cuttings or disturb them without the root breaking off. We have found if they are rooted in bottomless deep cell trays where air root pruning can occur and roots can develop till stronger attachment basal attachment occurs - that they can be transplanted and handled well after 12-18 months. Probably only commercially available in the U.S. from Camellia Forest Nursery in Chapel Hill, NC (where we got our plant - 919-967-5529). Best in full sun but will take light deciduous shade. Likely adaptable for use in USDA Zones 5-9.
- 9516 *Leucothoe axillaris* (Lam.) D. Don. 'E. H. Wilson' - "E.H. Wilson Coast Leucothoe" (Ericaceae). A southeastern U.S. native broadleaved evergreen shrub growing from Virginia to Florida to Mississippi with panicles of white flowers. This markedly different cultivar selection was found and introduced by Tom Dodd Nursery in Alabama for its tiny foliage and dense growth. Like most Ericaceous plants - this species needs well-drained but moist organic soil conditions for best success - much like that needed for *Rhododendrons*. The plant is not patented and can be grown freely by producers. Very easy and fast from cuttings. Best in light shade, and likely adaptable for use in USDA Zones 5-8.
- 9517 *Leucothoe fontanesiana* (Steud.) Sleum. 'Rollissonii' - "Rollissonii Drooping Leucothoe" (Ericaceae). (Now listed as *L. walteri* in the RHS Plant Finder). Again, a southeastern U.S. native broadleaved evergreen shrub growing to 4-6' and producing panicles of white flowers. A number of cultivars have been selected and 'Girard's Rainbow', 'Lovita' and 'Scarletta' are commonly seen in more northern areas where it is more easily grown as a garden plant. In Zones 7-8, soil conditions determine success and excellent drainage with good moisture in light shade is essential for success. This cultivar was selected in 1914 at Kew Royal Botanic Gardens, London for its leaves which are narrower than the species. Very easy from semi-hardwood to hardwood cuttings at any time of year. Likely adaptable for use in USDA Zones 5-8. Our plant in front of the brick classroom building outside the volunteer's office.

- 9418 *Nolina sp.* - "Beargrass" (Agavaceae or Liliaceae). A little-known genera of 25 species of plants found mostly in the southwest and Mexico - although the southeastern U.S. has several species including *N. georgiana* from N.C. They are somewhat yucca-like plants with many tending to a more "grassy" look with longer, thinner and more flexible leaves than most yuccas. Some remain as grassy rosettes, while others can make massive woody trunks and reach 25' in height. They produce tall, branched panicles of whitish-green flowers in summer. We have a half-dozen species doing well in the "desert habitat" on the southwest corner of The NCSU Arboretum (now the JC Raulston Arboretum). The plants in this distribution come from seed of a new unknown species collected in Mexico by Yucca Do Nursery - and are being distributed for adaptation trial. Best in sun and good drainage. All species are easily propagated by seed without stratification, or by division of multiple-crown clumps. Likely adaptable for use in USDA Zones 7-9.
- 9519 *Nyssa sinensis* Oliv. - "Chinese Black Gum" (Cornaceae). An Asian counterpart to the southeastern U.S. native *N. sylvatica*, Black Gum - but in the Asian form the plant is much larger in both foliage and stature, and is more vigorous. Introduced to western culture from China in 1902 but rarely cultivated in the U.S. or in commercial use. Our plant (in the west arboretum across from the large 'Fantasy' crepe myrtle) has grown 4-7' per year with handsome clean foliage. Although the species is noted for brilliant orange and red fall foliage color, as with the native species - when in active vigorous young growth under high fertility - such bright color does not develop. Propagation is by seed. The fruit are purple and the size of small cherries, and are harvested in fall as they turn color (racing the birds to see who gets them first), depulped by fermenting in water and washing seed clean, and given 3 months cold stratification after which they germinate readily and in high percentages. We have been very happy to finally get large quantities of seed from our single tree and to find it germinates so well - but recently Dr. Santamour at the U.S. National Arboretum raised the issue of the true identity of these seedlings. Apparently *Nyssa* are supposed to be self-sterile - and the question has arisen as to whether these are true *N. sinensis* seedlings (on this theory, they are not as we have only a single tree) - or hybrids with the other 3 species growing nearby? So we distribute these with this nagging question (which happens with at least one plant every year it seems). But there are no bad Black Gums - so watch it and enjoy. For a guaranteed true species plant, Black Gums can also be easily grafted on to seedling understock (by either side veneer grafting or chip budding in winter, or by T-budding in summer - probably on any species). Best in full sun, and the best fall color will come on a moisture and nutrient stressed planting site. Likely adaptable for use in USDA Zones 6-9. Our tree is directly across the path from the specimen *Lagerstroemia fauriei* 'Fantasy' in the west arboretum.
- 9520 *Osmanthus X burkwoodii* (Burkw. & Skipw.) P. S. Green - "Burkwood's Hybrid Osmanthus" (Oleaceae). (Sometimes also listed as *X Osmarea burkwoodii*). An outstanding broadleaved evergreen shrub created as a cross of *O. delavayi* X *O. decorus* in 1930 - and given the Award of Merit in 1978, and the Award of Garden Merit in 1984 by the Royal Horticultural Society. Leaves are dark green and glossy with fine toothing on the edges. White fragrant flowers are produced in early spring. Propagation is relatively easy from semi-hardwood to hardwood cuttings in late summer or winter. Can be grown in either sun or shade - but form will be tighter and flowering heavier in sun. Likely adaptable for use in USDA Zones 7-9. Our plant in the lathhouse.
- 9521 *Pachysandra terminalis* Sieb. & Zucc. 'Green Sheen' - "Green Sheen Pachysandra" (Buxaceae). Pachysandra is native to Japan and China and has become the most widely grown evergreen groundcover in northern areas, with less use in the south where it is less heat tolerant and slower to spread. This outstanding cultivar was found and introduced by Dale Chapman of Chapman Nursery, Hampton, CT in the late '80's for its glossy foliage. It is not patented or trademarked and is open for free production by anyone. Our trials have shown it to not only be more attractive than the straight species, but also far more heat tolerant with vigorous growth for rapid spread. Very highly recommended for production (originally distributed at the NCAN show in 1991 - with some growers now adding it to their lines) and very commercial. Best in shade and likely adaptable for use in USDA Zones 4-9. Our best planting, of several, is in the Winter Garden behind the east end of the perennial border, and across from the *Cryptomeria* collection.
- 9522 *Pittosporum heterophyllum* Franch. - "Chinese Pittosporum" (Pittosporaceae). A broadleaved evergreen shrub introduced from China in 1908, but not in commercial production or use in the U.S. The *Pittosporum* genus is a large one with over 150 species - and many forms and cultivars are grown commercially in California, New Zealand and England which have not proven hardy in NC. After some years of trials I finally realized that the varied species have two distinctly different points of origin - with many from Australia and New Zealand; and most of the rest from China. We have found that the Australia/New Zealand woody plants are almost universally not adapted for use in N.C. - and of course Chinese plants are the basis of much of the landscape planting of the southeast U.S. With this realization we began to see and work with the Chinese species and have found them to be quite promising. This species is widely variable and we have had one form since the '70's with no cold damage in even the record winter of '84. This is a much different selection with quite small foliage for the species and more dense and compact growth. It produces large masses of yellow flowers in early summer. Propagated by semi-hardwood to hardwood cuttings at most any time of year. Best in sun but will grow in light shade. Likely adaptable for use in USDA Zone 7-9.
- 9523 *Prunus persica* (L.) Batsch 'Pillar' - "Pillar or Columnar Peach" (Rosaceae). The common peach species grown for fruit production also has many ornamental cultivars (which rarely have decent fruit in comparison) that have been in production over the last century. These include dwarfs, weeping, fastigate, and multi-colored flower forms. This cultivar was selected for its tightly fastigate form and pure white flowers which make a spectacular show in early spring. Very easy from semi-hardwood cuttings under mist in summer and very rapid growing in production. Generally considered to be relatively short-lived in the southern landscape (10-20 years) - but the inexpensive plants are cost effective and useful even so. Best in sun and with good moisture availability. It does produce fruit which are edible - but they won't win any prizes at the fair. Located in the west arboretum as "gateway" specimens on either side of the first path to the right after entering the west area. Likely adaptable for use in USDA Zones 5-9.

- 9524 *Rohdea japonica* (humb.) Roth. - "Rohdea" (Liliaceae). A broadleaved evergreen herbaceous perennial native to China and Japan used as a specimen plant or for a taller groundcover in masses. Although there is only one species, in Japan it has become a major speciality collector plant with hundreds of variants - dwarf, variegated, contorted, striated, etc. - in commercial markets, with a plant society and books of color photographs available. The species is grown on a limited basis in the southeastern U.S. and quite surprisingly it grows well all the way north to Boston. It is propagated by seed collected in autumn (red or orange the size of a cherry) with the pulp removed, and cold stratified; or by division of the clumps. The seedlings being distributed came from seed collected at the U.S. National Arboretum in 1994. Best in shade and likely adaptable for use in USDA Zones 5-9.
- 9525 *Salix integra* Thunb. 'Hakuro Nishiki' - "White Tip Willow" (Salicaceae). (Also listed as *S. purpurea* var. *multivervis*, *S. 'Axukime'*, and *'Albomaculata'*). The species is a deciduous shrub to small tree native to Japan and Korea. This highly ornamental cultivar, with new growth of nearly pure white foliage in its best condition, originated in Japan in 1979 and quickly moved to Europe where it has already become a large selling speciality crop in Holland and Germany. Since *Salix* importation from Europe is banned by U.S. regulations - it moved to the U.S. via the Canadian market and then to the Pacific Northwest U.S. where we finally got it from a retail nursery after admiring it for some years on European trips. An indication of its great eye appeal could perhaps be seen when we put our first plant in the White Garden and some overzealous nurseryman stubbed all limbs completely to the ground to get every possible cutting - not a leaf was left. Sigh - but willows do generally regrow. In the heat of Raleigh, the coloration has not been as good as seen in Holland in our short term look - but it may improve with plant age; and certainly in western N.C. ('96 addendum: we were relieved and happy to see a spectacular show of pure white variegated foliage in the spring of '96 in its first flush growth season with us - and as expected it has faded through the summer). As with most willows it is very easy from softwood to semi-hardwood cuttings in summer, or from hardwood cuttings in winter. The Dutch often grow it as a grafted and pollarded "standard" with the annual new growth in a globe form producing maximum color and impact. Best in full sun, and will grow in a variety of soils - particularly good on wet sites near water. Likely adaptable for use in USDA Zones 5-8. Our largest plant is in the east arboretum "streambed" near the conifer collection.
- 9526 *Salvia greggii* A. Gray 'Fireman's Red' - "Fireman's Red Sage" (Labiatae). A herbaceous perennial native to Texas and Mexico with many cultivars selected from seedling variation that are widely grown in the southwest. In the southeast they are more affected by root rots on poorly drained hot, wet soils; and by winter hardiness. This is the first selection to have a clear red flower. We have had it in the arboretum for some years with excellent long season flowering on a plant reaching 3' in diameter. (In front of the display lath house). An excellent article on the genus and its ornamental uses has just appeared in *American Nurseryman* 182(4):55 (August 15, 1995) - by Richard Dufresne - the top *Salvia* authority in the U.S. who lives in Greensboro, NC (910-674-3105). Easily propagated by softwood cuttings. Best in full sun with good drainage. Likely adaptable for use in USDA Zones 7-9.
- 9527 *Spirea X bumalda* Burven. 'Dolchica' - "Fernleaf Spirea" (Rosaceae). A 2-3' tall deciduous shrub occasionally grown and sold commercially in the southeastern U.S. but strangely not listed in any of my extensive standard plant references except by Dirr - who does not give its origin - so something of a mystery plant. But a very fine one. It has the standard dwarf spirea habit with pink flowers - but what sets it apart is the rough serrate-edged "cutleaf/fernleaf" nature of the leaves. New growth is bronzy-purple. A handsome and useful landscape plant. Very easy from softwood cuttings in summer. Best in sun, but will grow in light shade. Likely adaptable for use in USDA Zones 3-8. Our plant near Beryl Road at the front of the farm by the Southall Garden (near the *Acer campestre* 'Compactum' discussed as 9501 above).
- 9528 *Syringa oblata* var. *dilatata* (Nakai) Rehd. - "Korean Lilac" (Oleaceae). Lilacs are one of the most recognized and desired of landscape plants in America with their long historic connections into the Colonial era of New England, and the beauty and fragrance of the masses of purple flowers of *S. vulgaris* in spring. In a large and diverse genus, sadly, most of the ones that "look and smell like a *real* lilac" are not heat tolerant and do poorly in the southeastern U.S. In our trials, this species has been the best in looks, fragrance, heat and stress tolerance. It is from Korea and was introduced to the U.S. by Ernest Wilson in 1917. We have an excellent clone we are working through NCAN with for formal introduction and marketing - due in the future. Cutting propagation is almost impossible, and for commercial use, tissue culture is the recommended propagation technique. Seed from arboreta or garden lilac collections is risky as the species hybridize readily, but we have isolated plants in a field nursery which set a heavy seed crop in 1994. We have grown a population of seedlings from this planting for distribution here - which are *probably* - but not guaranteed, to be this species. They are not the NCAN clone. Best in sun and tolerant of a wide range of soils. Likely adaptable for use in USDA Zones 4-9. Unfortunately our best plant is in the field nursery and not available for public viewing.
- 9529 *Thujaopsis dolabrata* Sieb & Zucc. ex Endl. - "Thujaopsis" (Cupressaceae). A very beautiful conifer tree native to Japan which was introduced to the west in 1853. Although grown by conifer hobbyists, and not necessarily an uncommon plant in arboreta collections - somehow it has never moved into mainstream commercial production. It has great landscape value as a specimen tree and good production characteristics of easy propagation (semi-hardwood and hardwood cuttings) and fast growth. It can reach 60' in height with age. Best in full sun, but will grow in light shade. There are several cultivars - dwarf, variegated, etc. - but this is the species itself which is being distributed here. Likely adaptable for use in USDA Zones 5-7. In the east arboretum conifer collections.
- 9530 *Tsuga sieboldii* Carr. - "Japanese Hemlock" (Pinaceae). A beautiful conifer tree to 60' from southern Japan introduced to western culture by Phillip von Siebold about 1855. The needles are broader than the American species, glossy above with a white band beneath. Rapid growing and a very handsome species definitely worthy of commercial trial. Surprisingly easy from hardwood cuttings taken in January - our plants rooted 98%+ with massive root systems by summer. Sun or partial shade. Likely adaptable for use in USDA Zones 5-8. Our best plant in the lath house.
- 9531 *Ulmus alata* Michaux 'Lace Parasol' - "Lace Parasol Weeping Winged Elm" (Ulmaceae). Winged elm is a deciduous tree native to the eastern U.S. from Virginia to Florida to Kentucky, named for the corky winglike bark which can be quite dramatic on individual seedlings. Although very beautiful and extremely stress tolerant - often a pioneer crop on topsoil scraped sites - it is

essentially never grown or used in the commercial ornamentals/landscape market and no cultivars have been selected. Many years ago a Chapel Hill nurseryman found and saved a small seedling tree in the woods which had a weeping habit and moved it to his home property. When he died, his estate offered the arboretum this tree if we would dig and move it to the arboretum - which we did in the spring of 1992. It has established well in the open area east of the Rose Garden and is now one of the treasures of the arboretum - located directly west of the rose garden in an open lawn area. At 45 years of age the tree is roughly 8' tall and 12' wide with magnificent structure and branches which display the winged bark in winter - sort of an English Camperdown Weeping Elm - but with dramatic winged stems. Propagation is by softwood to semi-hardwood cuttings in early-mid summer, or by high grafting on seedling understock to produce a more quickly saleable "standard". In nursery production growth can be rapid with 1-3' of growth a year. A plant for the speciality market - but very good commercial potential in this area. Should be planted in sun - and will tolerate a wide variety of soils; one of the best for difficult dry clay sites. Likely adaptable for use in USDA Zones 5-9.

***Cephalotaxus* Evaluations in The NCSU Arboretum (now the JC Raulston Arboretum)**

Kim E. Tripp and J. C. Raulston - (Original version in Proc. SNA Res. Workers Conf. 38:346-348. 1993).

Foundation plants are critical to both landscape and nursery professionals throughout the southeast. The search for a tough, easily produced and maintained, yet handsome foundation plant with good consumer appeal is an ongoing process. In the southeast, the challenge is intensified by the demands of the regional soils and climate which preclude the widespread and long term use of many nationally popular foundation plants like the northern nursery standard, *Taxus*. *Taxus* is not only a favorite of the northern segment of the industry, but is also a favorite of deer, an increasingly serious pest that will likely only become more of a problem with time. In addition to the demands of tough, deer-infested sites, foundation plants are also often subjected to at least partially shaded growing environments in the close confines of tight suburban developments - this is especially a problem as many of the more popular foundation plants that will tolerate some shade are not the best choices in the compacted clays of southeastern urbanized settings.

In trials at The NCSU Arboretum (now the JC Raulston Arboretum), a variety of *Cephalotaxus* selections with forms ranging from strongly upright, to low and spreading, have proven to be well-adapted to sun or shade sites in heavy Piedmont soils. In addition, *Cephalotaxus* has remained completely undisturbed by deer in other, unfenced arboreta and trial sites. Easily produced from cuttings, *Cephalotaxus* is not only a successful alternative in the southeast for the landscape and production niche generally assigned to *Taxus*, but is also an excellent foundation plant in its own right for a diverse array of landscape settings.

Results and Discussion: *Cephalotaxus* selections in a variety of forms have performed well in full sun, partial shade and full shade even in heavy clay soils. All are hardy from zone 5 - 9 and are easily propagated from cuttings and rooted under mist. In general, *Cephalotaxus* is moderate to slow growing, with growth rates slowing as shade is increased (without any overall detriment to the plant). It prefers moist, well-drained soil but appears to thrive in almost any soil if adequate moisture is provided. Foliage may yellow and scorch somewhat in exposed locations with bright winter sun or strong winds. While one or two cultivars of *Cephalotaxus* are currently in general production, there are many other forms that are equally, or more desirable.

Some of the best selections from trials at The NCSU Arboretum (now the JC Raulston Arboretum) are described below, as well as brief notes on other forms of interest (either for reference or to avoid nomenclatural confusion). *Cephalotaxus* is dioecious with male and female flowers on separate plants. The large, berry-like fruit are of interest developing as 1-2" olive-green ovals and maturing to a purplish-brown. Certain named cultivars are separated by their male or female character. The nomenclature of *Cephalotaxus* has been historically varied and inconsistent between the UK and USA. Names used below reflect the most general consensus of current literature available to the authors (1,2,3,4,5,6,7).

- *C. fortunei* - Fortune's Plum Yew is a small tree or large shrub native to China with perhaps the most elegant foliage in the genus. Needles are 2-3 inches long, 1/8 inch wide with a long, tapering (but soft) tip, and glossy, black green. It will ultimately reach 10-15 feet in height with open, whorled branching. Bright white stomatal bands line the needle undersides. 'Grandis' is a female selection from Hillier's Nursery with exceptionally long needles and large fruit - 'Longifolia' is the male counterpart of 'Grandis'. 'Prostrate Spreader' is a low prostrate form selected at Hillier's over 50 years ago with spreading branching that will ultimately form a branching groundcover.
- *C. harringtonia* - Japanese Plum Yew, one of the forms indigenous to Japan, is the most common form found in production in the US. It is shrubbier and coarser than *C. fortunei* with shorter, wider, stubbier needles whose undersides are gray. *C. harringtonia* is more densely branched than *C. fortunei* with narrower branch angles that give the appearance of 'V' shaped profiles. 'Duke Gardens' originated at Duke University as a horizontal spreading sport of 'Fastigiata' with dense growth and dark foliage - a striking and reliable foundation shrub. 'Fastigiata' is an usual form with radially arranged, horizontally held needles on upright branches - the unusual appearance is of bundles of formal, black-green bottle brushes set on end. Young plants of 'Fastigiata' are quite columnar and are excellent as vertical evergreens in shade areas but as the plant matures it develops into a large, global mass (over 10 years). 'Fritz Huber' is a low, outward branching form of especially good foliage quality with reduced burning in exposed sites. 'Gnome' is a Hillier's sport from 'Fastigiata' with similar growth and needle arrangement to 'Fastigiata' but is an overall dwarf form that develops into a low dome. 'Korean Sun' has typical *C. harringtonia* foliage but the new growth emerges a light gold in the spring which quickly fades with the first heat in the south. The growth rate of 'Korean Sun' is especially slow. With 'Prostrata' there is always discussion as to whether this low spreading form is a true mutation or perpetually propagated plagiotropic growth but it

is always a beautiful low plant that is especially striking massed around buildings and hardscape.

There are also a number of botanical varieties of *C. harringtonia* that seem to shift back and forth between separate species or botanical varieties. *C. harringtonia* var. *drupaceae* is a shrubby form found in the wild of Japan and central China. Needles are held on the branches in a distinctive 'V' shaped pattern with relatively dense branching that develops into a beautiful mass with pendulous branchlets as it matures. *C. harringtonia* var. *koreana* is a compact form found in Korea and China that has been described at different points in time as both *C. harringtonia* var. *koreana* and as a separate species, *C. koreana*. *C. harringtonia* var. *nana* is a low spreading form that reportedly layers easily.

- *C. koreana* at The NCSU Arboretum (now the JC Raulston Arboretum) was collected in Korea in 1985 as a distinct species with vigorous, upright habit and glossy, dark green foliage (not dissimilar to that of *C. fortunei*). This taxa does not consistently fit referenced descriptions of the botanical variety *C. harringtonia* var. *koreana*.
- *C. sinensis*, the Chinese plum yew has an upright habit and horizontal branching similar to *C. fortunei* with shorter, wider needles like those of *C. harringtonia* but with bluish undersides to the needles.

Other species of *Cephalotaxus* presently not in cultivation that can be found in Asia include: *C. griffithii*, *hainanensis*, *mannii*, *oliveri*, and *wilsoniana*. Of the many botanical and horticultural selections of *Cephalotaxus* perhaps the five with greatest potential for nursery and landscape use in the southeast are *C. fortunei* (either the species or 'Grandis'), *C. harringtonia* 'Duke Gardens', 'Fritz Huber', 'Fastigiata', and 'Prostrata' (with 'Korean Sun' as a collector's special interest selection). The *Cephalotaxus* offer landscapes and nurseries of the southeast an opportunity to provide high quality, deer-proof foundation plantings of great beauty, character and utility combined with excellent potential for production.

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(Notes: Following her initial interest in this group as published above, Dr. Tripp continued to do further research after moving to the Arnold Arboretum of Harvard University and eventually published lengthy, more detailed papers on *Cephalotaxus* in both the November 1, 1994 issue of American Nurseryman magazine, and in the Spring 1995 issue of Arnoldia. For those who want more information - I refer you to those sources. Also - the cultivar plants are often very hard to find in commercial markets; and it is good news that Duke Gardens in Durham has recently opened a gift shop in the garden - and unlike most public gardens who carry the lowest common denominator mass market plants in their gift shops - Duke Gardens (as one would expect) is going for quality - and attempting to stock (as available) - small plants of *Cephalotaxus* 'Duke Gardens' which are very rarely available anywhere else.)

The NCSU Arboretum Evaluation of Southwestern U.S. and Mexico Native Plants

J. C. Raulston, John Fairey, and Carl Schoenfeld (Original version in Proc. SNA Res. Workers Conf. 40:317-319. 1995)

Over the last 20 years, the NCSU Arboretum (now the JC Raulston Arboretum) has received over 9,000 accessions from 55 countries for trials of adaptation and ornamental merit at Raleigh, NC in USDA Hardiness Zone 7. Traditionally Southeastern U.S. native plants and Asian species have been most important in nursery/landscape industry importance. A cooperative relationship has recently developed between The NCSU Arboretum (now the JC Raulston Arboretum) and Yucca Do Nursery of Waller, TX for evaluation of new plants discovered in their extensive explorations of the southwestern U.S. and Mexico. To date, over 55 collecting expeditions have been made in Mexico alone by Yucca Do Nursery. Originally it was felt that this geographic region would have little promise for adaptability of plants to the Piedmont of North Carolina with likely problems of root rotting in heavy clay soils during summer rains, and lack of winter hardiness. In reality, many outstanding plants are emerging from this testing and merit further consideration by nurserymen and gardeners.

Results and Discussion: The following listing covers 21 plants or plant genera from Mexican introductions, evaluated over the past 5 years, which have performed well at The NCSU Arboretum (now the JC Raulston Arboretum) and briefly indicates their characteristics, performance and commercial potential.

- *Acer skutchii* - fast and vigorous growing species of maple with large foliage which has tolerated heavy clay soils and is cold hardy to at least 0F. Can be rooted from softwood cuttings.
- *Agave parryi* - a very widespread geographic range species with several botanical varieties. In The NCSU Arboretum (now the JC Raulston Arboretum) trials since 1981 from other sources and very hardy, surviving the record winter of -9F. Beautiful blue foliage. Propagation by seed or plant offsets. Many, many other species worthy of trial.
- *Beschorneria septemtrionalis* - an little-known genera of yucca-like woody lilies found primarily in the shade of forest areas. This species flowered for the first time at NCSU in 1995 and was one of the highlights of the year with spikes of spectacular red and green flowers, followed by chartreuse spherical seed pods.
- *Cercis canadensis* ssp. *mexicana* (Mexican Redbud) - one of the best plants to emerge from this testing. Significant for the small glossy foliage and compact growth habit. Unlike most eastern redbuds, this species can be rooted from softwood cuttings and has already moved into commercial production and use.
- *Clethra pringlei* - an evergreen species of this fine genera of plants with white fragrant flowers, eventually making a tree in its native habitat. Initially looks promising in USDA Zone 7, and will certainly be useful in Zone 8. Can be rooted from softwood cuttings.
- *Cornus florida* ssp. *urbiniana* (Mexican Dogwood) - an unusual ecotype of the eastern dogwood characterized by flowers in which the bracts are fused and held together as the "flower" opens, creating an open sphere resembling a Chinese lantern. Has not yet flowered at NCSU but is growing well to date. Likely propagated by softwood cuttings.
- *Dasyliirion* sp. (Sotols) - a large and widely varied group of woody lilies rarely grown in the eastern U.S. but showing great promise in trials. Physically similar to yuccas with longer and narrower leaves which is often toothed.
- *Eryngium umbellifera* - a herbaceous evergreen perennial with blue-purple flowers and dramatic cut-leaf foliage of great textural beauty - growing 12-18" tall and making colonies of spreading plants. Leaves are spiny and defend the plant well against animals, including humans!
- *Fagus mexicana* (Mexican Beech) - very rare and new to cultivation. The initial promise is very good with marked tolerance of heat stress. Potential problem of frost damage from early emergence from dormancy in spring. Commercial use will be limited by lack of seed stock until fruiting plants are available in cultivation.
- *Hamamelis mexicana* (Mexican Witch Hazel) - very rare and new to cultivation. In Mexico this flowers in summer with foliage and seed pods on the plant at the same time; in N.C. it is more likely to flower at some point during winter but this is yet to be seen. The clone in cultivation has unique creamy white flowers filaments. Has been easy to root from softwood cuttings which grow off rapidly.
- *Ilex rubra* - a beautiful 15-25' evergreen, red-fruited tree in its native habitat of the San Carlos mountains; proving to be slow in growth in N.C. Seed and cutting propagation have been used during collection from the native site; and cuttings have rooted well.
- *Illicium mexicanum* (Mexican Anisetree) - this evergreen, maroon-red-flowered plant has been in American commerce, apparently from a single clone collected in Mexico many years ago. The plants tested in this program have been the first source identified, wild-collected materials available. The seedling batch was widely variable, and one superior seedling was selected and named 'Aztec Fire' for buildup and release to nurserymen. Hardy in USDA Zone 7-9.
- *Magnolia tamaulipana* (Mexican Evergreen Magnolia - originally introduced as *M. scheidiana*) - a beautiful evergreen tree with heavy textured, fragrant, sculptural white flowers. Three different clones are growing successfully in The NCSU Arboretum (now the JC Raulston Arboretum) but have not yet flowered. Can be propagated by budding or grafting on *M. grandiflora* seedling understock for commercial production.
- *Mahonia chochoca*, *gracilis*, and *lanceolatus* - widely varying species of "Grape-Hollies" with *M. chochoca* growing in full sun on dry stressed soil, and the other two more often seen in light to heavy shade on better soils with more moisture. The later two seem more likely to have commercial potential with beautiful fragrant yellow flowers in mid-winter. *M. lanceolatus* has 18" panicles of flowers which open at the tips while blue fruit matures at the base of the flowering spike.
- *Manfreda* sp. - a large group of "herbaceous agaves" which die to the ground in winter and develop often dramatic and beautiful foliage in summer, with exotic flowers in a variety of white, yellow, green, purple, and brown colors. Easy from seed or division of colonies. Potential for the cut flower market.
- *Muhlenbergia dumosa* - (Bamboo Muhly Grass) - a dramatic and very beautiful plant of fine texture, with appearance of a clumping bamboo arching to 3-4' tall and 4-6' wide from the base. Has been hardy in USDA Zone 7. Fast from seed, or clumps can be divided. Has quickly moved into the N.C. nursery industry following promotion two years ago.
- *Nolina* sp. - a large group of woody lilies with appearance half-way between yuccas and grasses; texturally very beautiful plants for the landscape. Most have proven to be excellent in our trials with interesting spikes of creamy to white flowers.
- *Philadelphus* sp. (Mexican Mock-Oranges) - an almost unknown, and often yet unidentified taxonomically, group of deciduous shrubs with varying growth habits and flowering characteristics. All have excellent fragrance and some have pink coloration and darker colored "eyes". Most have finer texture than the Asian types now commonly grown. Easy from softwood cuttings and of commercial potential.
- *Quercus* sp. (Mexican Oaks) - an enormous group of widely variable plants with over half of all North American oak species occurring in Mexico. Plants range from deciduous to evergreen, and from tiny groundcovers to majestic trees. All tried at this point have done surprisingly well in our nursery of heavy clay soils subject to flooding. *Q. canbyi* is fine textured with red oak type scalloped foliage, very rapidly growing with up to 6' per year. *Q. polymorpha* is quite variable (as the name indicates) with large, thick leathery semi-evergreen foliage, more moderate in growth with 1-3' per year. *Q. risophylla* is perhaps the most beautiful with heavily textured and scalloped foliage which emerges with pink-bronze color on new shoots - evergreen to deciduous depending

upon winter temperatures encountered. Hardy to at least 5F. Commercial potential of oaks often depends on availability of acorns for propagation. Trials indicate some Mexican oaks have potential for cutting production.

- *Styrax glabrescens* var. *pilosus* (Mexico Styrax) - a very rare small tree with showy white flowers. Related (likely an ecotype) to *S. grandifolia* native to the southeast U.S. but with larger foliage and flowers. Easy from softwood cuttings and of commercial potential. Apparently hardy in USDA Zone 7.
- *Stryax youngae* - an extremely rare Texas 3-4' shrub thought extinct for over many decades and recently rediscovered in a Mexican population. It has grown well (in a raised, well-drained bed) at The NCSU Arboretum (now the JC Raulston Arboretum) and produces outstanding white flower displays in spring. Probably from softwood cuttings, but our plant now produces good seed crops as well.

Significance to the industry: The addition of Texas and Mexico native plants to The NCSU Arboretum (now the JC Raulston Arboretum) plant evaluation, introduction and promotion program has been extremely productive in potential of many new plant products which are not in commercial production. Of the 21 Mexican plants or plant genera discussed above, the following 7 have the greatest mainstream commercial potential for the Southeastern U.S. at present: *Cercis canadensis* ssp. *mexicana*, *Dasyllirion* sp., *Eryngium umbellifera*, *Illicium mexicanum*, *Mahonia gracilis*, *Manfreda* sp., *Quercus risophylla*, and *Muhlenbergia dumosa*.

(Note - Yucca Do Nursery plants are available by mail-order catalog order from: Yucca Do and Peckerwood Gardens, FM 359, P. O. Box 655, Waller, TX 77484 (409-826-6363) - catalog \$3. They also have one of the largest selections of *Cephalotaxus* taxa for sale in the U.S. - discussed in the previous article.)

BOOKNEWS

Good, unique reference books on woody landscape plants from an American source are almost rarer than nurserymen producing variegated coffeetrees (a notable fruitless quest of mine for many years now) - so it is exciting to get another book from that "uniquely out in his own world" (B.A. in history; does not drive; bicycles thousands of miles; creates salads containing over 100 different wild edible plants, etc.) incredible plantman - Arthur Lee Jacobson - North American Landscape Trees. His first books on Trees of Seattle and then Purpleleafed Plums established his amazing range of detailed knowledge of woody plants - and with this book he creates a nationally useable, practical reference guide to the origin and characteristics of ornamental trees and their cultivars. Dr. Santamour of the U.S. National Arboretum states: "A taxonomic tour de force! The most comprehensive current compendium of the history and nomenclature of the wide range of native and exotic trees cultivated in American landscapes." Detailed coverage of over 5,000 tree taxa with 250 color photographs - a must reference book for any horticulturist's bookshelf. Contains origins of the plants, their characteristics, and location of record trees. (We must note that his observation that the record *Lagerstroemia fauriei* - at 44' in the Los Angeles County Arboretum - is of course topped considerably by the true record plant in The NCSU Arboretum (now the JC Raulston Arboretum)!) ISBN 0-89815-813-3, 1996, 719 p.; from Ten Speed Press, P.O. Box 7123, Berkeley, CA 94707 - \$39.95.

Plantsmen are continually looking for good trial data on cold hardiness of plants - and one of the best new sources of such from an excellent "test climate" (-30F) is now available in Woody Landscape Plant Cold-Hardiness Ratings - published by Paul Cappiello and Lyle Littlefield of the University of Maine. Dr. Cappiello spoke to the friends of The NCSU Arboretum (now the JC Raulston Arboretum) recently - remarkable work. The Technical Bulletin 156 (June 1994) is available from Dr. Paul Cappiello, Dept. of Plant, Soil and Environmental Sciences, University of Maine, Orono, Maine 04469.

Garden Bulbs for the South - by Scott Ogden; 250 p., Taylor Publishing Co., Dallas. 1994. ISBN 0-87833-861-6. Missed in my too infrequent newsletters but an absolute MUST for gardeners. When the majority of gardening books sold in Southern mass market book outlets are written in England, it is a joy to encounter one with unique and accurate information to boldly expand the herbaceous plant palette with plants that know something about heat. Yes, there is indeed a world beyond *Cardiocrinums* - take a look at extraordinarily exotic looking *Curcuma* (see sources listing below), *Amorphophallus*, *Crinum*, and *Hymenocallis* for a garden jolt. Highly recommended - nothing better for the region. \$22.95.

Daffodils for American Gardens - by Brent and Becky Heath; 143 p., Elliott & Clark Publishing, Washington, DC. 1995. ISBN 1-880216-33-7. "In a field long-dominated by British horticulturists, this is the first exhaustive text on daffodils written by and for North American gardeners." The Heaths are well known throughout the U.S. horticultural world for the fine bulbs they have sold for so many years, and for their endless lecturing and educating at meetings throughout the country. A most beautiful, full-color book on every conceivable phase of daffodil culture - with a final encyclopedic full-color listing of the 200 best cultivars for North American gardens. Highly recommended. They also do slide lectures and workshops (15 different ones) on all phases of the bulb world - for info and fees contact: Brent & Becky Heath, 7463 Heath Trail, Gloucester, VA 23061 (804-693-3966).

Seeds: The Definitive Guide to Growing, History and Lore - by Peter Loewer; 230 p., MacMillan, Inc. 1995. \$25.00; ISBN 0-02-574042-3. The most prolific horticultural writer in N.C. with over 14 books on gardening has added another extremely useful reference to his credentials. "Seeds" is certainly comprehensive - with everything from history, romance, and science to the nuts and bolts of how to do it - and importantly - commercial sources of where to find them to do it with. Whether a total beginner, to a research scientist - something for everyone in this volume.

Outrageous books department - Kew Royal Botanical Gardens is working on the World Checklist of Seed Plants - amazing detail - they're now up to the letter C of the alphabet with 3 volumes of 1,600 pages total now available to purchase at astonishing cost. A project of a taxonomist, R. Govaerts - I just can't imagine the individual and mind that would even attempt such.

Botany at a more applied level is available in *Plant Form - An Illustrated Guide to Flowering Plant Morphology* by Adrian D. Bell. Photos and diagrams of every imaginable morphological term - intercalation to prickles to tillering. 1991, Oxford University Press, 341 p., ISBN 0-19-854279-8 - \$49.95.

A cheaper, yet similar guide is *Plant Identification Terminology: An Illustrated Glossary* by James G. and Melinda Woolf Harris, 1994, 198 p., ISBN 0-9640221-5-X - \$17.95 from Spring Lake Publishing, P. O. Box 266, Payson, UT 84651 (1-800-876-1579 orders; 801-465-0867 info). A "comprehensive illustrated guide to the vocabulary of plant taxonomy". It defines over 2,400 taxonomic terms and provides over 1,700 illustrations of those terms; invaluable for field botany or plant taxonomy studies.

Another very applied botanical book is *The Growing Tree* by Brayton F. Wilson - originally published in 1971 and extensively revised in 1984, University of Massachusetts Press, ISBN 0-87023-423-424, 138 p. - \$10.95 paperback. "Elementary, simply written and thorough survey of the life history of trees"; "Covers just about everything one would want to know about how a tree grows" - a good practical applied plant physiology book for horticulturists, foresters, and gardeners. Material difficult to obtain in this form - I was excited to find it.

The electronic information world of course continues to explode (as I cower imploding in techniphobe terror; praying for early retirement to avoid feared contact) - if you want the maximum state of the art in this area check into HORTCD - all 50 years of 430,000 records from 2,300 serial horticultural publications each year are available for only \$6900 (purchase; or just \$2495 per year by lease). From: CAB International, Wallingford, Oxon, OX10 8DE United Kingdom (FAX +44 (0)1491 826090). Sigh.

More reasonable is *Southern Trees* - from the University of Florida and USDA Forest Service Southern Region. An interactive Windows and DOS compatible CD-ROM program covering 880 Southern trees with 65 data attributes of each, and 2,800 color photographs to see the plants at all seasons and in all details. Available for \$183.15 (total) from Betrock Information System, Inc., (1-800-627-3819).

But for real books - recent catalog receipts.

Fair Meadow Books for Gardeners and Collectors, 36 Rucum Rd., Roxbury, CT 06783 (860-354-9040). Used and out-of-print books.

Sagapress, Inc., 133 S. W. Second Ave., Suite 450, Portland, OR 97204-9743 (1-800-327-5680). High quality new books on landscape design history and practice.

Levenger - Tools for Serious Readers, 420 Commerce Drive, Delray Beach, FL 33445-4696 (1-800-544-0880). Journals, book stands, and more office and desk "stuff" than you can imagine in this hardcore yuppie catalog.

A bit away from the normal subjects worked here - but many of our "Friends" have interest ties to the arts world and would enjoy a guide to the public art in N.C. Until sadly eliminated by the new acultural political climate, N.C. had a most effective program of legislatively funded art for public buildings. The North Carolina Arts Council's Department of Cultural Resources, Raleigh, NC 27601-2821 (919-733-2111, ext. 15 or 31) has published *A Guide to North Carolina's Artworks for State Buildings* for those who would like to seek out and view these works as they travel throughout the state. They also have a slide talk program that can be reserved for use by interested community groups to view these works. An excellent example would be the two wonderful metal sculpture gates at the newly opened N.C. Arboretum in Asheville - one of the last commissions to be funded by this program before its unfortunate cancellation.

And of course good food plays a critical pleasure role in the lives of almost all gardeners - and the two worlds come together in a new cookbook created by the students of the NCSU Horticulture Club - *The Cultivated Cookbook - Four Seasons of Good Eating*. With an introduction by Dr. Marc Cathey, President of the American Horticultural Society (Davidson, NC native and NCSU Hort Alumnus), chapter headings by Tony Avent, and recipes from faculty, staff and students of the NCSU Horticultural Science Department - 115 pages. Raulston contributed recipes for popcorn (is this gourmet food or what?), banana splits, and the family heritage recipe from the '30's - Cracker Salad. What other cookbook could you find which includes: Malaysian Marinade, Dirt Dessert, Whoopie Pies, Watermelon Popsicles, Beer Biscuits, Cajun Cabbage, and Topsy Oysters? Available for \$12 (includes mailing) from: Cookbook, NCSU Horticulture Club, Kilgore Hall, NCSU, Box 7609, Raleigh, NC 27695-7609. (And aprons for \$8 - includes mailing).

For all the book news above - I rarely "read" horticultural books for pleasure anymore - most serve as references for work life. A few quotes or recommendations from the 54 "real world, home pleasure reading" books completed so far in 1996:

The Beak of the Finch - Jonathan Weiner - 03/17 **** Unquestionable the best book read in several years - a Pulitzer Prize winner for non-fiction; the true remarkable story on recent research of the evolution of Galapagos Island finches first discovered by Darwin on his voyage of the exploration ship, Beagle. Brilliant research written about in an engrossing manner - this was one recommended by friend and colleague, Dr. Tom Ranney, NCSU Horticulturist stationed at the Mountain Horticultural Crops Research Station near Asheville - and once I received it - I lost a full day of work as once it was started I couldn't put it down and read it in a single setting (took 4 poppers of pop corn to make it). Highly, highly recommended.

The Collector's Garden - Ken Druse - 03/19***. A rare exception to my actually reading of the text of horticultural books - but since I'm mentioned, I really can't review it; NCSU Arboretum (now the JC Raulston Arboretum) friend, professional writer and Raleigh gardener Bobby Ward volunteered the following review: "When Mildred Pinell of the Atlanta Botanical Garden spoke recently at the North American Rock Garden Chapter meeting in Chapel Hill, NC, she said that she was glad to be back in the "Garden Mecca of the United States." Ms. Pinell's observations are confirmed judging from the focus of a new book that provides attention to several local gardeners

and gardens (The Collector's Garden: Designing with Extraordinary Plants by Ken Druse, Clarkson Potter Publisher, \$45, 1996). This book contains the most handsome and stunning photographs I have ever seen of gardens and plants. They belong to some twenty-eight passionate plant collectors, growers, and "missionaries." Mr. Druse describes the obsessions of these gardeners whose motto seems to be "I never met a plant I didn't like."

His portraits include such locals as J. C. Raulston whom Druse calls "Superstar" (punning his initials with the Andrew Lloyd-Webber musical); J.C. is described as America's pre-eminent missionary who spreads the garden gospel from his pulpit at The NCSU Arboretum (now the JC Raulston Arboretum). On the following page, Nancy Goodwin of Montrose Garden at Hillsborough is featured in a chapter called "She Stoops to Conquer" and later, in a photoessay of the garden itself, is described as a "genteel gardener with a flamboyant eye". Nancy has promoted hardy cyclamen especially through her former nursery, and almost single-handedly spurred a national interest in this group of plants. Raleigh News & Observer columnist Tony Avent and his wife Michelle's new garden in southern Wake County is featured along with Edith Eddleman's, the designer and co-maintainer of the Jekyll-esque perennial border at the NCSU Arboretum (now the JC Raulston Arboretum).

Druse certainly knew whom to seek out since he includes other garden luminaries who have made recent "pilgrimages" to the local Mecca to give lectures: Dan Hinkley's Heronswood nursery and lush garden among Douglas firs near Seattle; Judy Glattstein's former woodland garden in Connecticut (she now lives in New Jersey) with aroid "denizens of the dark"; Norman Singer and Geoffrey Charlesworth's long-term collaborative rock garden and their untreatable disease (seed-oholism) in the Berkshires in Massachusetts; Panayoti and Gwen Kelaidis urban rock garden in Denver; and in Texas where John Fahey and Carl Schoenfeld's Yucca Do garden is filled with native-Mexican plants. And there are more eye-bulging pages and a score more of premier gardens of other plant enthusiasts, including a spread on striking variegated plants. There is one drawback to the book: regrettably there are no photographs of the gardeners, themselves, who make these wonder-filled gardens grow."

Going the Distance - George Sheehan - 05/19 ** (Philosophical discussions by noted runner/writer/doctor on dying as he confronted his coming death from prostate cancer).

"Where is the wisdom we have lost in knowledge? Where is the knowledge we have lost in information? T. S. Eliot.

"There is a difference between "This will teach you" and "You will learn this". We can be taught a variety of things in a variety of ways, but things that we "learn" are direct, immediate, illuminating events that happen to us, where we are center stage. Things we are taught we know of; things we learn we know intimately."

"There is another country the aging occupy and which we share with children. Its borders are formed by the animal that arises in puberty and subsides with the onset of wisdom. It is a land where seven and seventy are kin. Where there are no concerns other than playing and learning and loving. The inhabitants of this land are in no hurry. Our days are dense with experiences. We have, as the Spanish say, more time than life."

Derek Jarman's Garden - Derek Jarman with photos by Howard Sooley - 05/21 ***

Jarman was a noted English painter, theatre designer, and filmmaker who died in 1994. This book contains diary entries from his last year of life spent at his "garden" created with plants and "found objects" on a flat, bleak desolate beach site next to a nuclear power plant in Dungeness, Kent. Much philosophy of life, memorable photos, and observations on gardening. "My garden is ecologically sound, though work of any kind disrupts the existing terrain. Dungeness is an SSSI (Site of Special Scientific Interest), so there are restrictions on what plants can be grown. In any case, so many weeds are spectacular flowers: the white campion, mallow, rest-harrow and scabious look wonderful. Introducing these local flowers into the garden makes a little wilderness at the heart of paradise. And there can be no complaints about my flint garden - it spoils nothing. It was built over the drive of the old cottage. The dog roses are the joy of the copse by the lakes. Once, when I was transplanting a small seedling to the garden, I was assaulted by an ecological puritan from Canterbury. 'Do you realize you could be doing damage?' 'Yes', I said. 'Well why are you planting that rose?' 'It's a Dungeness plant. If the world stopped still and humanity ceased, who could tell if it had been planted by me or by a bird?' He drove off."

Independence Day - Richard Ford - 05/25 *** (Pulitzer Prize)

"Most people, once they reach a certain age, troop through their days struggling like hell with the concept of completeness, keeping up with all the things that were ever part of them, as a way of maintaining the illusion that they bring themselves fully to life. Most of these you just have to give up on, along with the whole idea of completeness, since after a while you get so fouled up with all you did and surrendered to and failed at and fought and didn't like, that you can't make any progress. Another way of saying this is that when you're young your opponent is the future; but when you're not young, your opponent's the past and everything you've done in it and the problem of getting away from it."

The Debt to Pleasure - John Lancaster - 06/16 ****. Picked up for its "look & feel" in the store on a new books shelf - warm chocolate-colored thick paper cover, with cut-out cover to a remarkable still life painting of a peach with a single drop of water gleaming on it. Ostensibly about food and cooking on the surface (four menus for the four seasons of the year) - but not really. A 20 page essay on a fresh greens tossed salad may contain a single sentence about the salad ("select a good grocer and fling yourself on his mercy") - and roam the world over in topics and events in getting to it. Remarkably complex writing for those who enjoy the pleasure of exotic words used masterfully.

Have you seen the new Georgia O'Keeffe U.S. postage stamp of her painting, Red Poppy, 1927? It comes as a souvenir sheet with her photograph and a quote from the time she was asked why she made her revolutionary flower paintings so monumentally large (for that time) - she replied "Nobody sees a flower, really - it is so small - we haven't time, and to see takes time, like to have a friend takes time." She wanted her flowers to be big enough that people would "see" them - and succeeded.

So many words, so many books, so much pleasure - so little time. Good reading everyone.

PLANT SOURCES NEWS

As always - the ultimate plant source list is the annual edition of The RHS Plant Finder - by Chris Philip and Tony Lord - which has had a change of ownership and is now published by the Royal Horticultural Society. (Moorland Publishing Co.,Ltd., Moor Farm Road West, Ashbourne, Derbyshire DE6 1HD - priced at 12.99 Pounds Sterling + shipping costs). It now lists 65,000 plants and where one can buy them from 650 English nurseries. It also increasingly serves as an outstanding research reference source on current naming and taxonomy, and biographical sources. A new feature only available since June 1996 is a CD-ROM version which includes sources of 75,000 varieties of ornamental plants, the fruit and vegetable finder, the PPP-Index - a mainland European electronic plant finder, 25,000 varieties of seed, a database of 30,000 common plant names, 2,000 internet websites of botanic interest, as well as other features. (Sadly the listing in the manual has no price on this product - supposedly you can get a free evaluation disk from: The Plant Finder, Freepost, Worcester, WR2 4BR United Kingdom - which will allow you to access some of the information - then with a credit card to verify payment you receive a PIN number to unlock the rest of the material).

The Andersen's Horticultural Library's Source List of Plants and Seeds has long been America's best version of attempts at a U.S. plant source listing. There's good news - a new 4th edition, 1996 listing is greatly expanded over the several years old last edition - with more plants (59,000), more nurseries (450) and somewhat better handled in layout - and at the same price amazingly (\$34.96). And bad news - still not as comprehensive as could be possible - handling only a fraction of the plants that are available in the U.S. Still - it's invaluable - I'm in it almost daily and couldn't exist without it. Available from: Andersen Horticultural Library, Minnesota Landscape Arboretum, 3675 Arboretum Dr., Box 39, Chanhassen, MN 55317 - 612-443-2460; FAX 612-443-2521.

PlantSource - Where to Buy Plants in Southeastern Pennsylvania - is a guide resulting from sending over 1,000 questionnaires to plant producers in the horticulturally rich southeastern Pennsylvania area to obtain data for compilation. A project co-sponsored by Chanticleer Foundation, The Mid-Atlantic Group of the Hardy Plant Society, and The Scott Arboretum of Swarthmore College. The 113 page booklet is available for \$5 from: PlantSource, The Scott Arboretum, Swarthmore College, 500 College Avenue, Swarthmore, PA 19081. It does not list individual specific plants - but general categories from various sources.

The Canadian Plant Sourcebook 1996/97 Edition. 21,000 cultivars from 149 Canadian nurseries in a 416 p. book available for \$18 US - send check/money order to: The Canadian Plant Sourcebook., 93 Fentiman Ave., Ottawa, Ontario, Canada K1S 0T7. The first new edition of this useful reference in 4 years.

New to me is an unusual listing for "edible plants" (Aren't they all?? Some just kill you - but are certainly edible) - Cornucopia - A Source Book of Edible Plants by Stephen Facciola. A listing of 3,000 species and 7,000 cultivars from world nursery sources. ISBN 0-9628087-0-9. Available from: Kampong Publications, 1870 Sunrise Drive, Vista, CA 92084. (I have no price).

Nursery Sources of Native Plants of the Southeastern United States by Jan Midgley. Mail-order, wholesale, and retail nurseries are listed by state by code; and individual plants are assigned codes for the nurseries that supply them. \$10.40 to: Jan Midgley, 234 Oak Tree Trail, Wilsonville, AL 35186.

Gardener's Source Guide by Bob Armstrong, P. O. Box 206, Gowanda, NY 14070-0206 - \$5.95. A directory of 900 mail order sources keyed to 186 categories of plants; with additional associations, societies, magazines and publications. 33 p.

For industry professionals, a useful "local" sourcelist is the 1996 Guide to Virginia Growers - which lists 76 individual nursery sources for 2,500 varieties of plants at the wholesale commercial level. Available from Virginia Nurserymen's Association, 383 Coal Hollow Road, Christiansburg, VA 24073-9211 (540-382-0943). An additional guide was more recently published that will be of interest to professionals involved in wetland habitat protection and restoration - an increasingly important part of the landscape field - A Source Guide for Mid-Atlantic Wetland Plants - by Cathy Palmintier and Dr. Bonnie Lee Appleton - \$33 for non members.

Southern Plants, P. O. Box 232, Semmes, AL 36576 (334-649-5221) - mail-order of mainly native shrubs and trees, concentration on native azaleas. \$1 price list.

Following the bamboo lecture of Dr. Waddick last fall, NCSU Arb member Michael Ferrell asked if I knew of Tripple Brook Farm as a plant source - I did not, and he educated me with copies of info from the catalog and indicated they "have a pretty good variety of desirable plants I haven't been able to find elsewhere; . . . prices are reasonable; and they are reputable." The list of bamboos and grasses sent was very fine; and the catalog also contains many other types of plants. Catalog (don't know if a cost) from: Tripple Brook Farm, 37 Middle Rd., Southampton, MA 01073 (413-527-4626).

Few nursery catalogs are actually fun to read (Plant Delights of course comes immediately to mind as one exception - as Tony often says - we're in a badly humor-impaired industry); a great new one to me arrived from Joe & Sybil Kunkel of Akin' Back Farm (you know you're off to a good start already) - somewhat ignored by me upon arrival as it deals heavily with those things that are dead 60% of the

year; but what a treat once into it. Enjoy their story of "Obsessive Cumpulsive Gardening or The Famous Root Beer Plant" , discussion of PAU meetings (Plant Addicts United), "Invasiveness or The Plants from Hell" (Kudzu - "spreads nicely over a period of time"), "Varmint Control - A Top 9 List" (#9 - The "Caddyshack" approach - if all else fails and the varmints have won the battle, we recommend renting the movie "Caddyshack". The pests will still be around, but somehow they seem less important"), and "Kitty Credits" (the logic of microwaved turkey dinners for snow-bound kittys and the story of Shade - a Forrest Gump with paws, etc.). Much more - and a wonderful list of diverse plants you should buy to keep them in business for more entertaining catalogs in the future. Catalog \$2 from: Akin' Back Farm, 2501 Highway 53 South, LaGrange, Kentucky 40031 (502-222-5791).

Klehm Nursery has long been known for their magnificent peonies; more recently they've added *Hemerocallis*, *Hosta*, and *Iris*; and now to my special interest they are including woody plants in their beautiful mail-order catalog. Many wonderful items including *Acer miyabei*, *Heptacodium miconioides*, *Syringa reticulata* 'Ivory Silk', etc. But the real treasures (to me) are the many hybrid *Magnolias* - especially the newer cultivars of the "yellows" - 'Miss Honeybee', 'Gold Star', 'Butterflies', 'Elizabeth', and 'Yellow Lantern'. Free catalog available from: Klehm Nursery, 4210 North Duncan Rd., Champaign, IL 61821 (217-373-8400; 1-800-553-3715; website: <http://www.shout.net/~klehm>).

A flyer from Stokes Tropicals offers 5 species of *Curcuma* (reported above in Garden Bulbs for the South) and other sub-tropicals for hardiness trials throughout the south, or as "liftable" pot plants for overwintering storage. P.O. Box 9868, New Iberia, LA 70562-9868 (1-800-624-9706). A local gardener has tried the firm and found them reliable.

Another group of choice Southern plants rarely seen in commercial retail outlets are the spectacular summer flowering "bulbs" - the *Crinum*s; traditional "passalong plants" shared from one neighbor to another. In traveling you'll note in Southern cities the distribution of these plants in gardens is always in the older or poorer neighborhoods where people share plants - you'll never see them in the new suburbs where people buy all their plants. This summer I've been driving around "my neighborhood" in southeast Raleigh and enjoying the masses of white and pink flowers on 3' stalks in clumps up to 5' across - fabulous! Tejas Bulbs, Rt. 2, Box 652A, New Braunfels, TX 78130 (210-537-4808) now offers 9 cultivars of these magnificent plants with prices from \$3 to \$25 depending on division size and rarity. Note: they are wholesale only with a minimum order of \$100 - but hey, everyone should order at least one each of the cultivars in the large sizes and you've got a \$180 order with no problem!

The Elk Mountain Mountain Nursery, 142 Webb Cove Rd., Asheville, NC 28804 (704-258-8066; <http://www.ioa.com/home/elkmountain>) features a list of over 200 native perennials, vines, trees and shrubs. All plants are nursery propagated and container grown and shipped in containers. Good to see such fine plants a the native American Beech, *Fagus grandifolia*; and new N.C. cultivars such as *Clethra alnifolia* 'Fern Valley Pink' offered for sale.

We continually recommend the Momi Fir, *Abies firma* , as the best heat tolerant fir for the south - but it is rarely available (with *A. nordmanniana* and *A. X bornmuelleriana* as possible next choices). Nurserymen looking for wholesale sources of liners to use in production may want to check in with Treehaven Evergreen Nursery, 981 Jamison Rd., Elma, NY 14059 - Don & Joan Hilliker (716-652-4206). The largest list of fir liners I've seen anywhere - about 50 different taxa.

An exciting unique exceptional opportunity (I'm sorry - I do get carried away) to grow extremely rare plants has appeared with the development of a seed collection and sales business in Shanghai, China - available directly to the U.S. public. It is similar to the Index Seminum programs offered by botanical gardens to colleague gardens around the world - but normally not to public individuals. Qingpu Paradise Horticultural Co., Ltd., P. O. Box 031-116, 1337 Middle Huaihai Rd., Shanghai 200031, P. R. China offers a seed list of 228 selections of mostly wild-collected native Chinese plants - both herbaceous and woody. There are no import problems with seed and permits are not needed to order from overseas. Seed packets are \$1 per packet + \$1 for shipping if under 15 packets - over 15 packets shipping is free; send a check. Truly a mind-boggling list - I went wild; things like: *Camellia gigantocarpa*, *Carpinus simplicidentata*, *Melliodendron xylocarpum*, *Pittosporum illicioides*, *Sloanea sinensis*, *Styrax odoratissimus*, and *Zingiber mioga* - WOW!

It has been several years since we've put in the newsletter the "standard list" of mail-order nursery sources we often share at public lectures. This list focuses on all the N.C. mail order firms (of course they are the best!), and firms which deal in the more rarely seen woody plants - a speciality area with relatively few participants compared to the enormous world of herbaceous plant and annual seed mail-order firms. Obviously, many, many other fine firms exist to support.

Some excellent mail-order nurseries which sell a wide range of uncommon plants:

Antique Rose Emporium, Rt. 5, Box 143, Brenham, TX 77833 (1-800-441-0002) (Species & heritage roses) \$5

Arborvillage Farm Nursery, 15604 County Road CC, PO Box 227, Holt, MO 64048 (816-264-3911) (Exceptional woodies) F

Arrowhead Nursery, Watia Rd., Box 38, Bryson City, NC 28713 (Choice woody plants - many grafted cvs.) F

Avid Gardener, Box 200-NA, Hamburg, IL 62045 (618-232-1108) (Dwarf shrubs & conifers; perennials & groundcovers) F

Camellia Forest Nursery, P. O. Box 291, Chapel Hill, NC 27514 (919-967-5529) (Woody plants - many Asian rarities) \$2

Eastern Plant Specialties, Box 226, Georgetown, ME 04548 (207-371-2888) (Rare woodies & N. E. natives) \$2

Fairweather Gardens, P.O. Box 330, Greenwich, NJ 08323 (609-451-6261) (Rare woodies; many NCSU Arb plants) \$3.

ForestFarm Nursery, 990 Tetherow Road, Williams, OR 97544 (503-846-6963) (Huge array of choice inexpensive liners) \$3

Gossler Farms Nursery, 1200 Weaver Road, Springfield, OR 97477 (503-746-3922) (Huge array of choice woody plants) \$2

Greer Gardens, 1280 Goodpasture Island Rd., Eugene, OR 97401 (503-686-8266) (Rhod & Az; many other woody plants) \$3

Heronswood Nursery, 7530 288th NE, Kingston, WA 98356 (206-297-4172) (The plant kingdom - astonishing array!) \$4

Klehm Nursery, 4210 North Duncan Rd., Champaign, IL 61821 (217-373-8400) (Mostly perennials; Magnolias, Tree Peonies) F

Niche Gardens, 1111 Dawson Road, Chapel Hill, NC 27516 (919-967-0078) (Mostly perennials; S. E. US Natives) \$3

Northwoods, 27635 S. Oglesby Rd., Canby, OR 97013 (503-266-5432) (Unusual fruits & nuts; cold-hardy cultivars) F

Ornamentals, 516 W. 28th St., Richmond, VA 23225 (804-233-4089) (Acers, conifers, & rare woodies) F

Plant Delights Nursery, 9421 Sauls Rd., Raleigh, NC 27603 (919-772-4794) (Diverse array; perennials; hosta) 10 Stamps

Powell's Gardens, Rt. 3, Box 21, Princeton, NC 27569 (919-936-4421) (Diverse array; specializing in iris, hosta, daylilies) \$2

Roslyn Nursery, 211 Burrs Lane, Dix Hills, NY 11746 (516-643-9347) (Rare & unusual azaleas and rhododendrons) \$3

Sandy Mush Herbs, Rt. 2, Surrett Cove Rd., Leicester, NC 28748 (704-683-2014) (Herbs & perennials) F

Vintage Gardens, 3003 Pleasant Hill Rd., Sebastopol, CA 95472 (707-829-5342) (Over 600 historic rose cvs.) \$2

Washington Evergreen Nursery, P. O. Box 388, Brooks Branch Road, Leicester, NC 28748 (704-683-4518) (Conifers) F

Wayside Gardens, Hodges, SC 29695-0001 (800-845-1124) (Diverse array - spectacular catalogs) F

We-Du Nursery, Rt. 5, Box 724, Marion, NC 28752 (704-738-8300) (Collector rarities; perennials, alpines, Asian, bulbs) \$2

White Flower Farm, Litchfield, CT 06759 (203-496-1661) (Diverse array - elegant catalog; mostly perennials) F

Woodlander's Nursery, 1128 Colleton Ave., Aiken, SC 29801 (803-648-7522) (S. E. US Natives & Asian; huge array) \$2

Yucca Do and Peckerwood Gardens, FM 359, P. O. Box 655, Waller, TX 77484 (409-826-6363) (S. W. US & Mexico; Asian) \$3