

# JC Raulston Arboretum

## Friends of the Arboretum Newsletter

### Number 9

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### J. C. Raulston

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I suppose it was inevitable that I not be able to run my "string" of on-time newsletters all the way up to two - so here I am two months late and my mind bubbles with numerous excuses to offer for the delay. My most effective illustration would probably be to share that I took my Christmas tree at home down Jan. 29 and I still have optimistic hopes of getting my Christmas cards finished and mailed during March. How I do envy efficient people! O well, there's always the next issue to aim for. Here goes.

#### Announcements and Coming Events

March 14 - Special Guest Lecture. Dr. Donald Kellam of Charlotte will present a slide lecture on Rhododendron Hunting in the Himalayas at 7:00 PM - Room 159, Kilgore Hall, NCSU Campus. Dr. Kellam has made several trips to this fantastic land of beautiful ornamental plants and last year presented this talk to the Rhododendron Species Foundation in Seattle. Bring your friends to see this extra-special treat.

April 11 - Friends of the NCSU Arboretum (now the JC Raulston Arboretum) Slide Show. On Wednesday evening at 8:00 PM in Room 159 Kilgore Hall, I'll present a slide show on plant and garden highlights of the fall and winter of 1983 including top dwarf conifer collections on Long Island, the Bellingrath Gardens fall chrysanthemum show, and the Pacific northwest winter visit. We'll have a few "interesting" plants to give away in a drawing for some very choice rarities.

In order to get the newsletter out during our spring break all the rest has been run and only waits completion of this one last page so we can get it in the mail. So a detailed accounting of trips and plant records will wait until the May issue (which will better allow a full accounting of the effects of winter 83/84). But briefly I would highlight the period of summer '83-spring '84 with a few notes. Travel to the upper midwest to the superb university arboreta at the University of Minnesota and University of Wisconsin; an AABGA meeting at the Chicago Botanic Garden which has the most active expansion program (and\$\$\$ to do it right) of any public garden in the U.S.; a flight to Germany to see a whole series of gardens in Germany and Switzerland highlighted by the once-per-decade IGA show - a wonderful world's fair of horticulture attended by millions of visitors; (Note: The show for '84 is the all-summer Liverpool Show - first attempt by the British for such a large scale exhibition and will be well worth seeing); back to U.S. and a visit to the outstanding Berhheim Forest Arboretum; a fall "dwarf conifer" tour with Tom Dilatush to Long Island and New England - many outstanding collections and wonderful plants acquired for the NCSU Arboretum (now the JC Raulston Arboretum) (including the 2 specimen Acer griseum now installed in front of the lath house); and a Pacific NW trip in January for talks and of course nursery and garden visits - Hamamelis in bloom everywhere and wonderful.

If one looks back just one year and considers all the conditions we've encountered it's a bit of a wonder that any plants have survived the peculiar combination of climate factors we've encountered. The mildest winter in decades with a low of 10\_F and rarely below 18\_F allowing all kinds of marginal things to survive; early growth and then severe damage by late freezes; the longest cold, wet spring in ages (which pushed '83 rain totals above average) followed by a devastating hot, dry spell (Asheville hit its record high ever) in July-August which killed many plants; a long, very mild fall with no hardening temperatures before the disastrous Christmas day (and week) freeze. Of all the factors that can individually cause winter damage - all were present in combination. No hardening (no temperatures

below 20°F) with many plants in growth (when I left for Christmas on Dec. 23 - camellias and many other plants were in full bloom), a sudden drop to 5°F and accompanied by bright sun and high winds (which drain leaves of water and caused the browning leaf scorch on so many plants we never see affected). February has brought warm weather with subsequent early growth and likely water damage from late freezes. And our recent heavy rains and high winds have caused more uprooting and leaning of plants than we've seen before. As Mitchell says in *The Essential* defiance of nature in the face of problems and losses is what makes a gardener. So one survives by looking at the good, exciting things - the Hamamelis get better each winter (recent additions bring us up to 19 different ones), Prunus mume squeezed a beautiful bloom period into the February warm spell, 'February Gold' daffodil fulfilled its name as a cheerful spot in the magnolia grove, our 2 gorgeous cats grew fluffy from the winter temperatures and became even more insistent on their daily stroking requirements. Plans move forward on the white garden with much plant removal to prepare the site. Several large plants traveled to the Japanese garden and March/April should bring considerable planting there. Mapping proceeds well for development of a 200 page book index at the visitor center that will tell visitors not only what is in the collection by where to find them. And many people continue their emotional and financial support so necessary to keep our project running. Renewal notices accompany this newsletter and we sincerely hope for a high renewal rate. Your continuing support is very much needed. (Note: If you don't receive a renewal notice it indicates you are paid through to the next renewal period in January '85).

Azaleas for North Carolina - by Kim Powell - NCSU Extension

As one travels across North Carolina it is quite evident that azaleas are favorite ornamental plants for home gardeners and professional landscapers. Azaleas offer a wide range of size, form and color, and can be used as specimen plant accents or as a mass planting. Flowering dates are from late March to late June with both evergreen and deciduous types available. Azaleas can be grown all across the state (Zones 6,7,8,9), but in order for these shrubs to grow, mature, flower profusely, and generally contribute to the total landscape, an understanding of the different kinds of azaleas, the culture, and environmental factors is necessary.

Azaleas are grouped together as one species of the genus *Rhododendron* and are therefore members of the Heath Family (Ericaceae). This could cause some confusion because of the related plants referred to by the common name of rhododendron. This publication refers only to those plants which are true

azaleas. Botanically, azaleas are separated from rhododendron based upon floral structure. Azaleas have 5-7 stamens per flower, while rhododendrons have 7-10 stamens per flower. Currently, there are between 70 and 80 species of azaleas and several thousand cultivars. Our modern day azaleas which nurserymen grow and sell can be a species or a hybrid. Species are grown from the native environment or possibly grown from seed collected from a particular cultivated plant. Hybrids are developed through a controlled breeding process and are propagated asexually and distributed as a specific variety - or more correctly - a cultivar. Thus, the Pinxterbloom Azalea or Wild Honeysuckle (*R. nudiflorum*) is a species while 'George L. Taber' is a hybrid. Species will come true to type from seed while hybrids will not. There is obviously a great deal of confusion with classifying azaleas. The following is a simplified, short breakdown of the more popular groups being grown in N.C.

Kurume Hybrids.

This popular group of evergreen azaleas is generally thought of as dwarf or semi-dwarf in size. They range in height of 2-6 feet with a spread of 2-5 feet. Kurume azaleas have extremely dense foliage and twiggy branch structure. The hardiness zones are 6,7,8 and 9 with flowering periods in mid spring. The growth rate is considered to be moderate. The popular cultivars for N.C. nurseries are:

'Appleblossom'- light pink 'Coral Bells' - hose on hose pink

'Snow' - hose on hose white 'Hinodegiri' - red

'Christmas Cheer'- hose on hose red 'Flame' - orange red

'Salmon Beauty' - hose on hose salmon pink 'Sherwood Red' - orange red

'Hershey's Red' - semi-double bright red 'Hexe'- hose on hose violet-purple

'Delaware Valley White' - white Southern Indica Hybrids.

This group of azaleas, commonly referred to as Indica azaleas, are very popular in the eastern and southeastern parts of N.C. because of their lack of cold hardiness. Indica azaleas grow to a height of 6-12 feet with a spread of 6-8 feet and flower from late March to mid to late April. The flowers can reach a diameter of 2-3 inches. They are popular cultivars of the South. Indica Azaleas are as follows:

'Formosa'- rose purple - single - 3 inch diameter

'Fielders White' - white - single - 2 3/4 inch diameter

'George L. Taber'- light pink - single - 3 inch diameter

'Judge Solomon' - pink - single - 3 inch diameter

'Mrs. G. G. Gering' - white - single - 3 inch diameter

'President Clay' - orange-red - single - 2 1/4 inch diameter

'Pride of Mobile' - deep rose pink - single - 2 1/2 inch diameter

Belgian Indian Hybrids.

The Belgian hybrids were developed from the hybridization of the Indian Hybrids, in Belgium and England in the mid 1980's. Developed mainly as greenhouse forcing varieties, this group is extremely tender and not recommended for landscape use. Several popular cultivars are:

'Pink Ruffles' - violet red 'Paul Schaeme' - double light orange

'Albert- Elizabeth' - white with orange-red edge 'Triomphe' - double frilled red

'Hexe de Saffelaere' - hose in hose red

Indica Azaleas (*R. indicum*).

The true *R. indicum* from Japan (1883) is a small, dense, semi-evergreen azalea rarely reaching 3 feet in height. Most of the common late flowering cultivars (June) are sold as 'Macrantha' azaleas.

Dwarf Indica Azaleas (*R. eriocarpum*).

Commonly known as the 'Gumpo' group, these are the most popular dwarf azaleas for N.C. gardeners. These very low, dense, compact azaleas produce an abundance of blooms in June and even early July. 'Gumpo' produces white blooms with a 2 1/2-3 foot diameter flower and 'Pink Gumpo' is pale pink with a white edge.

Gable Hybrids.

This large group of hybrids was developed by Joseph Gable in Pennsylvania and introduced in the mid 1920's. This very hardy group was obtained by crossing the Korean and Kaempferi azaleas. This group of hybrids is very popular among gardeners in the western and northwestern parts of N.C. Popular varieties are:

'Rose Greely' - hose on hose white 'Mary Dalton' - orange-red

'Stewartstonian' - red 'Carol' - hose on hose violet red

'Big Joe' - reddish violet 'Herbert' - purple

'Mary Dalton' - orange-red 'Forest Fire' - hose on hose red

'Stewartstonian' - red 'Purple Splendor' - purple

'Carol' - hose on hose violet red 'Rosebud' - double rose

'Cameo' - hose on hose pink

'Corsage' - lavender

Satsuki Hybrids.

The Satsukis were introduced from Japan to the U.S. in 1938. Satsuki azaleas generally are low growing, only reaching a height of 2-4 feet and a spread of 2-4 feet. Flowering dates would be May to June with large showy flowers. Colors vary quite widely, some being one color, striped or some with a different color margin.

'Amaghasa' - deep pine - 3 1/2 inch diameter

'Beni-kirishima' - orange red - double - 2 inch diameter

'Gunrei' - white with small pink flecks - 2 inch diameter

'Higasa' - deep rose pink - single - 4 1/2 inch diameter

'Eiten' - mallow purple

Kaempferi Hybrids.

This is a large group of azaleas which originated in Holland around 1920. They are popular because they are extremely cold hardy.

'Fedora' - violet red 'Gretchen' - reddish violet

'Kathleen' - rosy red 'Carmen' - red

'Alice' - salmon red 'Charlotte' - dark orange red

Glenn Dale Hybrid.

This large group of hybrids have been developed since 1935 by B. Y. Morrison of the USDA at Glenn Dale, Maryland. They were developed to produce large and varied flowers like the Southern Indian Azaleas yet be much more cold hardy. Flowers can range to over 4 inches in diameter, single, hose in hose, semi-double and double. The general size would be 4-6 feet in height with a 3-4 foot spread. The flowering season was extended with the development of the Glenn Dale hybrids. Some flower as early as the Kurumes, in mid March, while others don't flower until mid June. There are over 450 named cultivars.

'Aphriodite' -- rose pink - single - 2" diameter 'Morning Star' -- deep rose

'Copperman' -- deep red - single - 2 3/4" diameter 'Eros' -- pink

'Fashion' -- rose with dark blotch - 2" diameter 'Aztec' -- peach red

'Glacier' -- white with faint green tone - 2 1/2-3" diameter

Pericat Hybrids.

The Pericat hybrids were introduced as greenhouse forcing azaleas in 1931. Some are as hardy as the Kurume but most are rather tender. (They were crosses between the Kurume and Belgian Indian Azaleas.) For landscape purposes they should be used only in southern areas of N.C.

'Flanders Field' - red 'Pericat White'

'Pericat Pink' 'Pinocchio' - rose

'Pericat Salmon'

Carla Hybrids.

Since the azalea breeding program was initiated in part, by a former N.C. State horticulturist now at L.S.U., all resulting cultivars will be released as Carla (North Carolina - Louisiana) hybrids.

In July 1976, the N.C. Agricultural Research Service approved the release of seven azalea cultivars -- Adelaide Pope, Carror, Elaine, Emily, Jane Spalding, Pink Cloud, and Sunglow.

In 1982 the Agricultural Research Service approved the release of four additional Carla hybrids -- Autumn Sun, Cochran's Lavender, Pink Camellia, and Wolfpack Red. The following are descriptions of the new azalea cultivars:

Elaine - Flowers light pink, fully double, medium sized rose-bud type opening full wide in later development, 1-3 flowers per bud; plant medium sized; bloom in Raleigh area April 16-26.

Carror - Flowers rose pink, semi-double, medium sized, 1-4 per bud; plant medium sized, compact; blooms in Raleigh area April 25-May 1.

Pink Cloud - Flowers light pink, predominately single, large sized, 2-4 per bud; plants medium sized; blooms in Raleigh area April 15-25.

Jane Spalding - Flowers rose pink, single, 1-3 per bud, medium sized; plants medium sized; blooms in Raleigh area April 15-25.

Emily - Flowers deep rose red, single, medium-small, 1-3 per bud, hose-in-hose (one flower within another); plant medium sized; compact; blooms in Raleigh area April 18-30.

Adelaide Pope - Flowers deep rose pink, single, medium-large, 1-5 per bud; plant medium large, vigorous, compact, blooms in Raleigh area April 15-25.

Sunglow - Flowers deep rose pink, single, medium large, 1-4 per bud; plant medium-large sized, vigorous; blooms in Raleigh area April 20-30.

Autumn Sun - Flowers bronze-red, hose-in-hose, medium small, 2-3 per bud; plant small to medium; upright-spreading, dense; blooms in Raleigh area April 15-25.

Cochran's Lavender - Flowers purplish pink, single, medium sized, 1-3 per bud; plant medium in size, spreading, dense, blooms in Raleigh April 15-25.

Pink Camellia - Flowers light purplish pink, completely double, rosebud tube opening full in later development, 1-3 flowers per bud; plant medium sized; blooms in Raleigh area April 15-25.

Wolfpack Red - Flowers strong red, single, small, 1-4 flowers per bud; plant semi-dwarf, spreading; blooms in Raleigh area April 15-25.

Exposure.

Azaleas prefer a cool, partially shaded site. Several varieties can tolerate full sun but most prefer an area that is not exposed to long periods of hot full sun and drying winds.

## Soils and Planting.

Azaleas grow best when planted in acid, well-drained soils with a pH near 5.5. A soil rich in organic matter is ideal for azaleas. Many folks mistakenly believe that digging a planting hole 3 or 4 times larger than is needed, adding crushed rock to the bottom and rich topsoil as a backfill, will solve all drainage problems. Holes dug in poorly drained soil will only fill with water and continue to hold this excess over a long period of time -- irregardless of the size of the hole. When soils are saturated, the amount of oxygen available to roots becomes very limited.

Generally, it is recommended to prepare a raised bed. Elevate the planting area to insure good surface and internal drainage. Sometimes a hole should not be dug -- just plant at grade level. Build up around the rootball with topsoil and plenty of organic matter. The organic matter can be decayed pine bark, sawdust, organic compost. Do not add fertilizer to the backfill at time of planting.

When planting balled and burlapped plants, be sure to remove any nylon strings or wire from the rootball. The burlap can remain around the rootball but be certain there is not a plastic liner inside the burlap. Many containerized plants will become pot-bound and will require special attention before planting. The layer of matted roots around the outside surface should be cut, loosened, or frayed out before planting. If not, the roots will fail to grow out into the surrounding soil and plants will be more susceptible to drought.

## Watering.

Watering newly planted azaleas is essential. If planted in a well-drained soil rich in organic matter, frequent watering will be required. Backfills dry out much faster than the original soil around the plant. Be sure not to apply quantities of water that will waterlog the media.

## Mulching.

A 3-4 inch layer of organic mulch around azaleas is recommended. This will help to discourage weeds, prevent soil crusting, hold moisture during dry periods, and maintain a more uniform soil temperature.

## Fertilizer.

Azaleas grow best with a moderate and even level of fertility. There are several special azalea fertilizers available which are excellent when used at recommended rates because of their slow release ability. Most homeowners will get satisfactory results from an 8-8-8 or 10-10-10 analysis. Over fertilization can cause severe damage. Therefore, split applications should be made in March, May, and July. Small plants, less than 12 inches in height, should receive 1 teaspoonful per application. For larger plants, a level tablespoon per foot in height should be sufficient. For large bed areas, 2-3 pints per 100 square feet can be broadcast. Maintaining the correct pH (somewhere between 5-5.5) and fertilizer requirement can only be determined by soil testing.

## Pruning.

Contrary to popular opinion, many azaleas do need pruning. Pruning is especially desirable to produce more handsome and compact growth for tall-growing cultivars. Any heavy pruning should be done immediately after the flowering period. Tall, rangy limbs that appear in the top of the plant should be removed down inside the body of the plant. To induce branching, pinch out tips of new growth between flowering and the first of July. Later pinching will reduce next year's flower production. Always remove any dead or injured branches when shaping or heading-back azaleas.

Dwarf azaleas also benefit from pruning. This gives better shape and improves flower clusters on established plants.

(DRAWING)

## Ideas of Plant Combinations and Uses

1. Things to avoid can be as useful as things to do - and boy did I learn about a disastrous combination! I did a planting of the *Agapanthus* and *Lycoris radiata* mentioned in the last letter and made a mistake of adding in a bunch of *Colchicums*. The *Lycoris* and *Colchicum* bloomed together and the red and pinkish-purple mix was about as gastly a combination as I've seen. A white pinkish-purple mix was about as gastly a combination as I've seen. A white *Colchicum* could be bearable however.

2. Make a mass planting (40+ plants) of a single color of the new dwarf crepe myrtles (being promoted for pot or hanging basket culture) on 2' centers and underplant with evergreen groundcover for star jasmine, *Trachelospermum asiaticum* (or *T. jasminoides* in warmer regions). The jasmine will bloom early summer, the crepe myrtle mid-late summer, after the fall foliage color display of the crepe myrtles prune them back into the jasmine foliage for an evergreen groundcover effect. An ideally, choose a location for full sun in summer and where the winter sun angle will provide winter shade to prevent jasmine foliage scorch in extremely cold periods. Another similar scheme with the crepe myrtles would include *Vinca minor* 'alba', *Narcissus* and *Lycoris*.

The development (and fall re-development) for the perennial border was one of the major 1983 accomplishments in the NCSU Arboretum (now the JC Raulston Arboretum). The Winter issue of Garden Design magazine had an editorial on garden trends and predictions for the future which included this statement "We expect to see perennials become the plants of the '80's. Several years ago, Americans "rediscovered" these horticultural treasures; since that time, their popularity has risen steadily. That, of course, is only natural, because perennials increase in size and beauty every year. Iris, daylilies, phlox and chrysanthemums will no doubt lead the trend; but

ornamental grasses, bee balm, columbine and culinary herbs are likely runners-up as perennial madness sweeps the nation." We feel fortunate to have someone as knowledgeable and talented as Edith Eddleman handling the development of our perennials display and in the following pages show shares some of her experiences and observations from 1983.

Perennials - by Edith Eddleman, perennials curator at the NCSU Arboretum (now the JC Raulston Arboretum)

Interest in gardening with herbaceous perennials is realigning throughout the horticultural world, expressing itself in numerous symposiums, classes and articles.

I had the opportunity this past year to attend two such outstanding gatherings. The first was the Perennial Plant Symposium at Ohio State University. (Topics addressed were seed propagation, tissue culture, field production, container production, over-wintering, marketing techniques, and control of pests and diseases.) John Elsley, Horticultural Director of Wayside Gardens, Hodges, SC, spoke on "Perennials for the Future" and defined these as plants which offer an extended season of interest through foliage, texture, flowers and fruits; are relatively free from pests and diseases; are self supporting; and provide flowers that hold up well when cut.

His list of "Super Perennials" was headed by the ornamental grasses. *Calamagrostis x acutiflora* 'Karl Foerster' flowering in June with rosy brown seed heads, and the later flowering, aptly named, *Stipia gigantea* were particular favorites. These are both long time residents of the NCSU Arboretum (now the JC Raulston Arboretum). *Coreopsis verticillata* 'Zagreb', only 12 inches tall, and *Coreopsis verticillata* 'Moonbeam', with greenish black foliage and pale yellow flowers, both mentioned by Elsley, have resided in our perennial border since June. 'Moonbeam' proved itself to be an outstanding performer blooming from late June till early November, at which time it was cut back and divided.

Other outstanding perennials mentioned were the evergreen *Geranium Sanguineum Lancastriense* 'prostratum', flowering May-October with pale pink red-veined flowers; *Cimicifuga simplex* 'White Pearl'; the non-flowering *Stachys lanta* 'Silver Carpet'; *Solidago x* 'Goldenmosa' (not a cause of hay fever); white, fall flowering *Chrysanthemum nipponicum*; the dwarf *Iris siberica* 'Little White'; *Bergenia cordifolia purpurea* with purple bronze evergreen winter foliage; *Liatris spicata* 'Kobold', an 18 inch selection of our 6 foot native *L. specata*. Look for these additions next spring in our border.

This symposium resulted in the formation of The Perennial Plants Association. Membership is open to all nursery persons, landscape designers, educators, garden writers and other interested persons. For membership information, contact The Perennial Plant Association, Attn: Dr. Steven M. Still, 249 Howlett Hall, 2001 Fyffe Court, Columbus, OH 43210; (614) 422-8524.

The second symposium was The New Perennials, sponsored by the N.Y. Botanical Garden. Fred McGourty, Pamela Harper and Robert Hebb covered topics pertaining to perennials including design, long season interest, combinations with shrubs, early and late flowering, color combinations and low maintenance.)

Perennials which received high marks from Mrs. Harper were *Sedum spectabile* 'Autumn Joy' (also sold under the name *Sedum s.* 'Indian Chief'), *Iris unguicularis* with fragrant lavender blooms borne November to March, fall-blooming lavender blue *Aster frikartii* 'Wonder of Staffa', and *Asclepias tuberosa* (our native butterfly weed). Both the *Sedum spectabile* 'Autumn Joy' and *Asclepias tuberosa* grew and flowered well in our border.

In March of this year the arboretum's long-planned herbaceous border was planted by volunteers and arboretum staff. The original border was 14 feet wide and 200' long, featuring bold groupings of colorful seed-grown perennials, punctuated by Easter lilies, bronze-foliaged cannas, and ornamental grasses. The border plantings grew and flowered surprisingly well (considering that most of the plants were first year seedlings) and provided color from March until the plants were dug in October to make way for a newly designed border.

In the fall all plants were dug and held in cold storage until Nov. 4-5 when volunteers again planted the border, increasing its size to 18' x 300'. The color scheme of this new design is based on Gertrude Jekyll's use of color at her home, Munsted Wood. In her lifetime (1843-1932) Mrs. Jekyll was the most influential designer of perennial plantings, and her influence is still felt.

Like her arrangement at Munsted Wood, our border is framed at each end by grey and glaucous foliaged plants, *Stachys lanta*, lambs ears, *Artemisia*, *Rue*, *Stipia gigantea* and *Miscanthus sinensis* 'variegatus' contrasting with the stiff leaves of *Yucca smalliana* cultivars 'variegatus' and 'Bright edge'.

As you approach the border from the Demonstration Gardens, the grey, silver and blue foliage plants are mixed with pale pink single hollyhocks and the deeper *Monarda didyma* 'Croftway Pink'. The soft blues of *Linum perenne* and the deeper blue of *Salvia farinacea* 'Blue Bedder' contrast with the gently yellows of *Oenothera missouriensis* and *Knipofia x* 'Primrose Beauty'. These colors in turn deepen into *Salvia guaranitica*'s purple-blue spikes displayed alongside silver foliaged *Artemisia ludoviciana albula* 'Silver King' and *Lythrum salicaria* 'Morden's Pink' accented by the white bell flowers of *Platycodon grandiflorus*.

Gradually the colors move into the strong chrome yellows of *Rudbeckia fulgida* 'Goldstrum', the clear orange lanterns of *Physalis Alice Kengi* and the fiery red-orange floral sprays of *Crossosmia pottsii*. Here *Phlox paniculata* 'Orange Perfection' is accented by the dark feathery sprays of *Foeniculum vulgare* 'Bronze cv.' and complimented by the strong purple of *Tradescantia x andersonii* 'Purple-brown red of *Monarda didyma* 'Mahogany', the bright red of *Salvia Greggii* and the clear reds of the tall *Canna x* 'Red King Humbert'.

Here *Lychnis chaledonia* underplanted with Red Emperor tulips drapes itself above the purple spikes of *Salvia x superba* 'East Friesland' and *Cherianthus fades*, and again the softer yellows of *Coreopsis verticillata* 'Moonbeam' and *Anthemis tinctoria* 'Pale Moon' mix with the grey-foliaged *Phlomis fruticosa* and *Salvia officinalis*. Grey-blue foliaged *Dianthus x allwoodii* reintroduce a gentle pink tint of the red hues left behind. At the west end of the border, lavender tints such as those of the creeping *Verbena tenuisecta*, *Phlox paniculata* 'Progress'; and the purple veined flowers of *Alcea zebrina* replace the blue shades used in the east section.

The border is punctuated by the seasonal blooms of *Lilium rubrum* L. Regale and L. 'Cape Cod Yankee'. Grasses form an important part of the border, providing contrasts of form and texture. A new collection of Cannas offer bold foliage and continuous flowering. *Lycoris radiata* and L. *squamigera* add their flowering notes in September and August. In July, the palmate foliage of *Hibiscus coccineus* and its red flowers are displayed to advantage against the backdrop of Nellie R. Stevens hollies.

To allow visitors greater enjoyment of the border, there are three pathways which lead into and through the different sections of the border. This arrangement is practical as well, allowing the gardener access to the border for replanting and weeding.

On the home front the past growing season was an instructive one. Many new (to me) plants were discovered and added to the border and plants I thought I know taught me a thing or two. The border had an exceptionally long season of bloom. This can be attributed in part to deadheading (the vigorous removal of spent flowers), and regular watering. Outstanding among the plants in terms of a long blooming period was *Cherianthus cheri*, the creamy orange fragrant wallflower, blooming from March till October. Other long bloomers included *Platycodon gradiflorus*. Its blue and white cultivars, opening their first flowers in mid June and continuing till October; *Hesperis matronalis*, sweet rocket, opening white and lavender blooms from June on. *Gaillardia* hybrids also flourished in this time period, as did *Anthemis tinctoria*. *Astermosa mongolica* also began flowering in June but exhibited its heaviest period of bloom from September to October. The mat forming *Verbena tenuisecta* opened its lavender flowers from June (when it was planted) until October. *Salvia farinacea* 'Blue Bedder', a selection of the Texas native, got a slow start and didn't begin flowering until July, but kept opening new lavender blue flowers on tall spikes until November. Tiny grasslike *Armeria maritima* bloomed in May and June and kept lifting occasional pink or white flower heads all summer. Its close relative *Armeria plantaginea* 'Bee's Ruby' surprised us with a deep rosy pink head of blooms on December 20. Truly *Flora hymelis*! Low growing silver-green foliaged *Nepeta mussini* flower most of the summer as did *Tradescantia x andersonii* hybrids 'Iris Pritchard', 'J.C. Wequelin', 'Purpledome', and 'Red Cloud'.

Surprising performers included *Viola* 'Blue Elf' which bloomed all summer and fall despite the heat; and *Digitalis x 'Foxy'*, which kept producing spikes of rosy lavender and cream colored flowers throughout the summer and fall. Then there were the shade-preferring (I thought) columbines which, though they quit blooming in mid-June, held their foliage all through the hot summer weather; and were the only ones I personally knew not plagued by leaf miners.

Other flowers that bloomed for long periods were *Echinacea purpurea* 'Bright Star', blooming from July to October; *Geum* 'Mrs. Bradshaw' opened her first double red blooms June 14, while here last flowers were reported on July 27.

*Salvia guaranitica*, a five to seven foot tall native of South America, began blooming in August and continued until November. *Belamcanda chinensis*, the blackberry lily, so-called because of its shiny black seed heads, bloomed July 7 to Sept. 20th. *Salvia x superba* 'East Friesland' opened purple flowers on twelve-inch tapers all summer and fall. *Achillea millefolium* and its cultivars *A. parthenium*, feverfew, flowered summer and fall. Anise hyssop, *Agastache foneiculum's* fluffy lavender spikes thrived all summer. Watch out, this one self-seeds like crazy! *Coreopsis* 'Sunray' bloomed obligingly for more than three months.

Disappointments included *Monarda didyma* 'Violet Queen': On July 7th \* recorded its first bloom, that was also the last. No other flowers appeared. I tried growing *Alchemilla vulgaris*, lady's mantle, in our border, where it looked distinctly unhappy. I was puzzled because plants grown in the shade and humusy soil of the lath house fared no better. Then I learned that these plants grow best in limey soils. They shall have lime.

New plants to look forward to in 1984 include the stately subshrub *Euphorbia wulfenii*; *Erysimum linifolium*, E. A. Bowles' mauve wallflower; June-flowering *Geranium x 'Johnson's Blue'*; a collection of *Solidago* cultivars; the 12 foot tall *Ferula communis*, a giant fennel from Southern Europe; a fine collection of *Salvias*; *Crinums*, large flowering members of the amrayllis family; *Aster tataricus*; and many more.

#### Book News

In the last issue I wrote about Michael Dirr's excellent new book on landscape plants as one of the best available. It has been a treat to receive another long-awaited new book which easily fits in the list of "most-useful" woody plant references. *Landscape Plants for Eastern North America* by Harrison Flint of Purdue University (John Wiley & Sons, 677 p.) is a superb classic publication. He discusses 500 major species and 1,000 secondary related species and for each he covers the factors of adaptability, useful range, season of interest, maintenance problems and major cultivars. Excellent line drawings showing plant form and size at various ages (difficult to find anywhere) are included. In the back of the book are lists of plants for various purposes - street trees, plants requiring shade in winter, plants tolerating wet soil, plants requiring distinctly acid soil, etc. This is a very high quality book with extremely good layout and design, and first rate information on woody landscape plants. It will probably not receive as much usage as it fully deserves because of two consumer limitations - there are no flashy color photos and most people buy flash (pictures) rather than information in plant books, and the price (\$60) is above that for a casual purchase. A superb and highly recommended book for a serious plantsman.

I just received a unique and very useful new publication devoted to information concerning agricultural books. They state, "We envisioned and the need to have a publication devoted solely to agricultural literature. The book buyer now has a single source to purchase literary needs, to read honest reviews about the latest books published by over 300 agricultural publishers, and to discover sources for books, manuals, slide-tapes, video tapes and computer programs." They will cover about 4,000 new books per year including such things as University of California Press, Australian Government, etc. An interesting feature is a free used book classified section for subscribers searching for out-of-print or hard-to-find books. The publication is Agricultural Books (6 issues/year) and is available from: Ag-Ho Service Company, 615 Merchant Street, Suite G, Vacaville, CA 95688 (707-448-8287 at \$8.50/year. The only problem I see is that the first issue alone costs me a small fortune in "must-have" items.

An intriguing book I haven't seen, but read of in the newspaper USA TODAY publishing news is: Life and Times of Michael K. by J. M. Coetzee (Viking Press). "In this new novel, the author writes of a poor gardener's struggle to survive in a brutal world." Sounds like must reading for some of our graduates!

One of my favorite articles of the winter has been Presently, in the Past in the Winter issue of Garden Design (p. 68-71) by Eric Grissell. His humorous philosophical musing on time and meaning in gardening is my favorite type of garden writing (very like Henry Mitchell). I include just a small bit to try to entice you to find and read the entire article - "The owners of most so-called gardens, I fear, are confined to a few square feet of earth for which they have no feeling. The soil merely has come with the house and is largely an inconvenience to be grubbed and weeded. In some instances, the entrusted earth will be given care, but will it every be cared for? Instant plants in full bloom, direct from some over-nurturing greenhouse or garden center, will be installed in unprepared soil, in the wrong place, and the owner will be satisfied - at least for the moment - with the usual, temporary results. The present will be mollified, the past and future virtually eliminated. yet for gardeners, the past is somehow consoling. Bad things were not quite so bad as then imagined; good things seem much better. And in the future, things will be quite their best ever. We can make of the future what we will, take from the past what we can and try to enjoy the present - momentarily. (The author is identified as follows "Mr. Grissell is a professional entomologist who has published nearly four dozen scientific papers of an exceedingly dull nature."). His garden writing is wonderful.

North Carolina is fortunate in having two of the finest ornamental insect and disease authorities in the U.S. working here and continually turning out an array of publications for the public and ornamental professionals to use. Drs. Ron Jones and Jim Baker have recently added another extremely practical and useful publication to the many written earlier. Their new Pest Control Calendar (24 p.) in the "Bugs and Blights" series tells when and what to use for control of most pests of azaleas, boxwood, camellia, crepe myrtle, dogwood, euonymus, holly, juniper, rhododendron, and rose. Highly recommended and available from either Jones or Baker, N. C. Agricultural Extension Service, NCSU, Raleigh, NC.

Two more followup stories to my previous discussions of The Secret Garden by Frances Hodgson Burnett (6 & #8 issues). Several people have told me it has also been made into a radio serial presentation and has been playing on one of the public radio stations in the Triangle Area but I've not heard any of the broadcasts, unfortunately. While browsing in an art print/poster store in New Orleans in December I saw a photograph poster of a mystical fenced garden with the title "The Secret Garden" and of course had to buy a print (the last one in stock it turned out). As the young woman rang up the sale and rolled the print for me to take, she asked if I knew the story about the secret garden. I feigned ignorance ( always so easy) and she proceeded to tell me it was the most wonderful book, her childhood favorite, a "must" I should read, etc. So the magic continues.

I've often mentioned the frightening realities of the large numbers of plants facing extermination around the world and a new book by Dr. Harold Koopowitz and Hilary Kay, Plant Extinction - Global Crises (239 p. - Stonewall Press, Inc., 1241-30th St., N.W., Washington, DC 20007, \$16.95) covers many aspects of this situation. The problems of habitat destruction, overcollecting, lost of potentially vital plants, gene banks, legislation, and politics are all discussed and case histories are presented for a number of plants that have or are facing extinction. Dr. Koopowitz directs the Irvine Arboretum of the University of California-Irvine campus and is developing a cryogenic bank of endangered South African bulbous species stored in liquid nitrogen for long-range preservation safety.

It is exciting to see the flow of new horticultural books coming from Timber Press and to see their list of topics in preparation. They are possibly bringing more materials out now on ornamental plants than any other book publishing company in America. A list of titles can be obtained by writing to: Timber Press, P.O. Box 1632, Beaverton, OR 97075 and requesting their folder of horticultural books available. A recent book, Growing Bulbs, by Martyn Rix is a follow-up text to "The Bulb Book, A Photographic Guide to Over 800 Hardy Bulbs which I wrote about in Issue. Where the earlier book showed primarily photographs of a wide variety of species, often in their native habitats - this new book is a text for a bulb specialist or serious amateur with much information rarely available on rare genera and species. With my personal interest in the relationship of habitat and climate to plant adaptability, I particularly enjoyed a 50 page chapter describing the climate and cultural requirements of bulbs from many countries. Where else could one learn about The Great Karroo (South Africa), The Anatolian Plateau (Turkey & Iran), Nairobi, the Himalayas, California, and even Nashville. As discussed in the book by Koopowitz above - the bulb world faces many crises of extinction from both habitat destruction and gathering of plants for hobby collectors. The author urges purchase of only known nursery-propagated stock. There are useful chapters on propagation, cultivation techniques and problems. A useful and informative book for an advanced amateur seriously interested in this fascinating group of plants.

"Traveling makes men wiser, but less happy. When men of sober age travel, they gather knowledge which they may apply usefully for their country; but they are subject even after to recollections mixed with regret; their affections are weakened by being extended over more objects; and they learn new habits which cannot be gratified when they return home." Thomas Jefferson 1787.

New Plants Received in the NCSU Arboretum (now the JC Raulston Arboretum) - August-December 1983

Anemone japonica 'Prince Henry', sylvestris

Narcissus 'Unsurpassable', 'Thalia', 'Ice Follies'

Tulipa 'Red Emperor', 'White Hawk', 'White Surprise', 'Zwanenburg', 'White Triumphator'

Satsuki Azalea 'Juko', 'Kusudama'

Nandina domestica 'Ikada', 'Tamahime', 'Tamazuria', 'Shirochirimen'

Hypericum olympicum, prolificum

Spirea rosthornum, mollifolia

Mehtha spicata, X villosa 'N.M. Nicholsoniana', longifolia, spicata cv. lacerata, X peperita crispa

Carex canescens, leporina

Hosta montana aureo marginata, 'Gold Edger', 'Hadspen Blue', 'Tokudama True', 'Todudama Golden', 'Blue Wedgewood', 'Samurai', 'Golden Prayers', 'Celebration', 'Blue Angel', 'Shade Fanfare', 'Green Fountain', 'Piedmont Gold', 'Gold Standard', 'Big Mama', 'Blue Moon', 'Blue Skies', 'Tokudama aureo Nebulosa', 'True Blue', Ventricosa aureo marginata

Pinus parviflora 'Ginborn's Ideal', 'Adcock's Dwarf'

Cedrus deodara nana, deodara 'Deepecove', deododara 'Klondike', 'doodar 'Verticillata glauca', libani glauca pendula, libani 'Minnata', brevifolia 'Epsteiwianu'

Picea pungens 'R.H. Montgomery' (grafted standard), 'Hoopsi', 'Iseli Foxtail', 'Iseli Fastigate'

Erica arborea alpina 'Silver King', 'Golden Haze'

Vinca minor 'Bowles', Gertrude Jekyll', 'variegata alba', 'La Grave', 'Gruner Teppich', alpina fl. fl.

Camellia 'Frost Prince', 'Frost Princess'

Lycoris aurea, radiata, squamigera

Ardisia japonica 'Hinode', 'Hoshiami', 'Kimigayo', 'Beniyuk', 'Hakuokan', 'Ama-No-Gawa',

'Chirimen', 'Ho-Fukurin', 'Hinotsukasa', 'Koganebana', 'Chiyado', 'Hokan Nishiki'

Chamaecyparis obtusa 'Verdoni', 'Lil Marky', 'Contorta', 'Bess', 'Meroke Twin', 'Golden

Sprite', 'Lynn's Ceramic Xmastree'

Sedum alboroseum variegatum, moranense, spathulifolium purpureum, anacampseros, senanense, album 'Murale Cristatum', 'Steftscho', spathulifolium 'Cape Blanco', lydium, ewersii var. homophyllum, confusum, brevifolium var. quinquefarum, divergens, album 'Coral Carpet', 'Silvermoon', sieboldii variegatum, reflexum 'Cristatum', hispanicum aureum, dasyphyllum v. rifanum, 'Moonglow'

Forsythia x 'Northern Gold', viridissima, intermedia 'Mertensiana', 'Arnold's Dwarf'

Juncus articulatus, squarrosus, bufonius

Caryopteris X clandonensis 'Blue Mist', 'Blue Bird', 'Heavenly Blue', 'Kew Blue' Buddlea davidii 'Nannaensis', 'Ile de France', 'Nanko Blue', 'Flaming Violet', 'Black Knidht', 'Fascination', 'Royal Red', 'Peace', 'White Bouquet', globosa

Cyclamen africanum, neapolitanum, persicum

Dicentra cucullaria, Exima 'Snowdrift', 'Exima 'Zestful', formosa

Erythronium albidum, americanum, mesochonum, purdyi, tuolumnense

Thalictrum diocum, flavum, kusianum, polygamum, 'Purple Mist'

Amsonia illustris, ciliata, hubrectii, ludoviciana, tabernaemontana var. salicifolia

Papaver 'Big Jim', 'Curllocks', 'Salmon Glow', 'Turkish Delight', 'White Queen', 'Blue Moon', 'Picotee', 'Midnight', 'May Sadler'

Hibiscus aculeatus, coccineus, militaris, moscheutos

Erythrina flabeliformis, herbacea, cristagalli

Thalictrum diocum, flavum, kusianum, polygamum, 'Purple Mist'

Amsonia illustris, ciliata, hubrectii, ludoviciana, tabernaemontana var. salicifolia

Papaver 'Big Jim', 'Curllocks', 'Salmon Glow', 'Turkish Delight', 'White Queen', 'Blue Moon', 'Picotee', 'Midnight', 'May Sadler'

Hibiscus aculeatus, coccineus, militaris, moscheutos

Erythrina flabeliformis, herbacea, cristagalli

Punica granatum 'Nejikan', 'Gosai-Ryu', 'Kanokosuigho', 'Nochisib', 'Sarasa Botan', 'Toyosho'

Hamamaelis mollis 'Pallida', vernalis 'Sandra', 'Jelena', 'Fire Charm', 'Primrose', vernalis

Juniperus procumbens variegata, 'Greenmound', 'California Dwarf'

Kalmia latifolia 'Silver Dollar', angustifolia, angustifolia alba, cuneata, angustifolia var. caroliniana

Magnolia grandiflora 'Edith Boque', grandiflora 'Hassie', de Vos 'Judy', deVos 'Ricki', kosar 'Jane', 'Nimbus', 'Picture', soulangeana 'Brozzoni', soulangean 'Brozzoni', soulangeana 'Coates', soulangeana 'Lennei', soulangeana 'Lennei Alba', sprengeri 'Diva', Watsoni, thompsoniana 'Urbana', denudata 'Wada', bodineri, ashei, fraseri

Juniperus horizontalis f. alpina, 'Glenmore', 'Variegata', 'Douglasii', 'Glauca', 'prostrata nana', 'puchella', 'Wilms', 'Blue Horizon', 'filicinus minimus', 'Montana'

Calceolaria John Innes Distylium racemosum

Convallaria majalis striata X Sycoparrotia semidecidua

Bergenia cordifolia alba, 'Perfecta' Akebia quinata 'Shirobana'

Crocus 'Snowstorm' Vitis coignetiae

Muscari White Tsuga mertensiana nana glauca,

'Hillside Gem`

Scilla campanulata White Eriophorum angustifolium

Hyacinth L'Innocence Artemisia spicata

Galanthus nivalis Teucrium pyrenaicum

Rhododendron serpyllifolium forma alba Gentiana cruciata, clausa, purdomi

Serissa foetida variegata-pink flowered Veronica gentianoides variegata

Acer cappadocicum Cornus nutalli 'Gold Spot'

Camellia 'Mary Christian' Acer palmatum Red Filigree Lace

Carpinus japonicus, orientalis Juniperus virginiana pendula

Digitalis mertonensis Pinus thunbergi j'Corky Bark'

Cotoneaster tomentosus, cashmiriensis Pinus sylvestris compressa

Pinus koriensis Myrica pennsylvanica

Quercus cerris Elliotia racemosa

Viburnum plicatum tomentosum 'Fugioanensis' Cercis siliquastrum

Cornus drmmondi Viburnum mongolicum

Picea yezo Shimizusei Acer cissifolium

Pinus mugo Allen Prunus tomentosa

Pinus griffithi zebrina Deutzia 'Mont Rose'

Pinus thunbergi Yatsa Ban-Shoho Salix repens 'Boyd's pendulous'

Pinus koreana glauca Euonymus fortunei 'Dart's Blanket'

Pinus koreana glauca Buxus sempervirens 'Varder VALley'

Pinus contorta var. contorta Pseudolarix kaempferi  
Dipteronia sinensis Deutzia scabra 'Godshall Pink'  
Escallonia 'Alice' Acer griseum (2 plants 8-10' tall)  
Genista cinerea Pinus densiflora pendula  
Itea ilicifolia Allium splendens thunbergi 'Ozuki'  
Nothofagus fusea, obliqua Herniaria glabra  
Paulownia lilacina Vaccinium 'Hamilton'  
Prunus laurocerasus Magnoliafolia Thymus citriodorus  
Prunus lusitanica Ilex crenata 'Pagoda'  
Torreye californica Chamaecyparis pisifera 'Tsukmo'  
Eremerus bungei, robustus Rhododendron atlanticum 'Choptank'  
Asarum viridiflora, lemonii Hippocrepis comosum  
Cardocrinum giganteum Pieris japonica 'Iseli Scarlet Bronze'  
Paeony 'Cora Stubbs' Fagus sylvatica purpurea pendula  
Azalea 'Joseph Hill' Rosa banksiae alba  
Iris sibirica 'Little White' Broussonetia kazonickii  
Gladiolus Winter Hardy Thuja occidentalis 'Tiny Tim'  
Indigofera decora alba, pseudotinctoria Redeodendron macrocarpum  
Amorpha glabra Pterocarya rhoifolia  
Salix elaeagnos Pinus pumila dwarf blue  
Olearia X scilloniensis Pinus strobus 'Horsford'  
Hupericum X moseranum 'tricolor' Pseudotsuga mertensiana pumila  
Cryptomeria japonica Jindi-Sugi Corylopsis willmottiae 'Spring Purple',  
Emenopterys henryi veitchiana  
Berberis linearifolia Garrya elliptica 'James Roof'  
Salix magnifica Helianthum 'Flame'  
Acer saccharinum laciniatum Taiwania cryptomerioides var. floussiana  
Stachyurus praecox Cistylum myricoides Hanghowensis  
Salix alba f. argentea 'Sericea' Salix alba f. argentea 'Regalis'  
Pieris phillyreifolia Stewartia malachodendron  
Poinciana gillesie Bumelia lanuginosa  
Halesia carolina Staphylea trifolia  
Ilex myrtifolia Lindera glauca, umbellata  
Passiflora incarnata var. alba Hexastylis arifolia  
Iris brevicaulis, verna Liatris aspera, elgans, spicata  
Zanthoxylum ailanthoides Clethra fargesii  
Styrax grandifolia, platinifolia Widdringtonia nodiflora  
Smilax pumila Thermopsis villosa

The list totals roughly 350 new accessions of species or cultivars added to the arboretum collections from August through December 1983.

#### New Catalogs and Plant Sources of Interest

Two new catalogs featuring somewhat similar plant materials became available in the fall of 1983. They feature Japanese maple cultivars and probably the largest numbers of dwarf and slow growing conifers of any commercial sources in the U.S. Both owners have extensive private collections of extreme rarities and propagate upon demand. Therefore, one may (but not always) have to wait 6 months to two years to obtain material desired. Buy many of the listings are so rare as to be unavailable anywhere else. Many very exciting plants. To obtain a catalog send \$1 to either: Michael A. & Janet Kristick, R. D. 1, Mockingbird Road, Wellsville, PA 17365 (717-292-2962) - or to: Robert L. Fincham, Coenosium Gardens, 425 N. Fifth Street, Lehighton, PA 18235 (215-377-1495 evenings). Kristick also has a large number of *Acer* species listed, and Fincham has a large number of *Fagus* cultivars (plus several cultivars each of *Cornus florida*, *Quercus robur*, *Betula alba*, and *Liquidambar styraciflua*).

A catalog full of color photos of "bulb" flowers is available from Tyty Plantation, Box 159, Tyty, GA 31795. Their two main listings are Cannas (37 cultivars ranging from \$1 up to \$55/division) and Crinums (15 types - \$5-75), but other rarely available plants include *Amamcrinum*, *Brunsdonna*, *Hymenocallis* (6 types), *Zephyranthes* (5 types), and others.

In recent issues several mentions have been made of rare plant nurseries moving to the "greener pastures" of N.C. from other areas. I want to extend a warm southern greeting to a recent nursery arrival from Boston. We-Du Nurseries Route 5, Box 724, Marion, NC 28752 (704-73808300; Richard Weaver, Jr. and Rene Duval) state: "we will specialize in nursery propagated Southeastern natives; Oriental counterparts of our native wildflowers; rare rock and woodland plants; and personal specialities such as ferns, species Iris, Allium, Trillium, Epimedium and hardy orchids." Their catalog is 50¢. If you have to have a complete plant collection A to Z - I know of no other place to find *Zizia* (a native N.C. wildflower).

If you've never seen the seed catalog from Thompson & Morgan Inc., P.O. Box 100, Farmingdale, NJ 07727, I would recommend obtaining a copy for your great pleasure in browsing through a fascinating array of choices. It comes from a British firm and covers 3,000 different items and contains 1,000 good quality color photographs. They constantly hunt for new and unusual plants around the world and many appear in America for the first time in this catalog.

In a recent issue of *Arnoldia* an excellent article discussed species roses and gave the following addresses as sources where one may purchase species and shrub roses: High Country Rosarium, 1717 Downing, Denver, CO 80218; Joseph J. Kern Rose Nursery, Box 33, Mentor, OH 44060; Lowe's Own Root Nursery, 6 Sheffield Road, Nashua, NH 03062; Mike's Roses, 6807 Smithway Drive, Alexandria, VA 22307; Pickering Nurseries, 670 Kingston Road, Pickering, Ontario L1V 1A6 Canada; Roses of Yesterday and Today, 802 Brown's Valley Road, Watsonville, CA 95076; Wyant Roses, Route 84, Johnny Cake Ridge, Mentor, OH 44060.

Another intriguing mention was to obtain or consult Combined Rose List (listing roses in commerce and cultivation, rose registrations, and hard-to-find roses and where to find them) - available from Beverly R. Dobson, 215 Harriman Road, Irvington, NY 10533.

It is with great pleasure we include as a special bonus a new 20 page listing of 246 firms which sell rare and unusual plants of all kinds. Last fall Mrs. Ramm asked if I could use help in updating my old list and I eagerly accepted her offer. Her own experience in ordering plants more than doubled the list, and she also provided typed first an corrected copies (for which my secretary is most appreciative). She is one of the true and loyal Friends of the Arboretum - at all programs, helping with every workday, donating plants, and now the new nursery sources list (which is already being traded around by rare plant nuts all over the country as possibly the best such list available anywhere. For all your help - many, many thanks Mrs. Ramm. Now you have on your conscience the frustration and bankruptcy endured by hundreds of people discovering many thousand of plants they MUST HAVE and can't afford. It's a cruel, cruel world.