
THE AZALEAN

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AZALEA SOCIETY OF AMERICA

The Azalea Society of America, organized December 9, 1977 and incorporated in the District of Columbia, is an educational and scientific non-profit association devoted to the culture, propagation and appreciation of the series *Azalea* (subgenus *Anthodendron*) of the genus *Rhododendron* in the Heath family (*Ericaceae*).

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THE AZALEAN

The Journal of the Azalea Society
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Volume 9 No. 1

March 1987

IN THIS ISSUE:

WILL THE REAL 'SHERBROOK' PLEASE STAND UP?

Donald H. Voss 1

THE AZALEA CALENDAR 4

TO KNOW AN AZALEA WELL

William C. Miller III 5

AZALEAS AND COMPANION PLANTS AT BARNARD'S INN FARM

Polly Hill 6

"Azalea Classic"—CULTURE OF RHODODENDRONS AND AZALEAS

Guy E. Yerkes 11

ACID PEATS AND ACID RAINS

Francis R. Gouin 18

VASE VALET 20

SHOOT PROLIFERATION IN VITRO OF TWENTY *ERICACEOUS* PLANTS

Margaret E. Norton and
Colin R. Norton 21

ASA NEWS AND VIEWS

President's Column 22

Society and Chapter News

9th ASA Convention 22

Nominees for Society Governors 23

In Memorium—William P. Parsons 24

Glenn Dale Preservation Project 24

1987 *AZALEAN* cover artist 24

Chapter Activities 25

Azalea Gardens to Visit:

McCrillis Garden 25

LETTER TO THE EDITOR

Azalea Petites 25

NEW MEMBERS 26

THE AZALEA MART 27

WILL THE REAL 'SHERBROOK' PLEASE STAND UP?

Donald H. Voss
Vienna, Virginia

Many years ago, a popular television game show involved having the participants listen to several individuals, each of whom would convincingly claim to be the named doctor, lawyer, indian chief, or whatever. The game participants would then try to identify the genuine and reject the bogus among the claimants. The denouement arrived when the master of ceremonies called out: "Will the real [whatever] please stand up?"

Azalea enthusiasts may find themselves unwitting and unwilling participants in much this sort of guessing game. Misidentification and mislabelling of plants are, unfortunately, not rare. The many causes range from the well-meaning-but-misinformed to carelessness to basic dishonesty. Among the principal causes are:

1. Valid description not readily available (perhaps because one does not exist).
2. Readily available description not used, whether through carelessness or ignorance of its existence.
3. Accidental mix-up in labelling plants by originators, intermediate propagators or distributors, and—yes—sometimes by the ultimate recipient.
4. Genetic instability, resulting in variant flowers appearing on vegetative propagations from a plant that bears flowers conforming to the valid description for the clone.
5. Deception through attaching spurious names to plants propagated from patented stock (or well-known names to plants other than true-to-name) for commercial or other advantage.

A case history—in this case involving lack of a readily available valid description and inadvertent mislabelling—will illustrate the confusion that can result when a mix-up occurs. Among the hybrids named by Robert D. Gartrell as Robin Hill evergreen azaleas is 'Sherbrook' (syn.: X55-9). The registration statement for 'Sherbrook' describes it as openly funnel-shaped with wavy petal lobes and a variable number of petaloid stamens; the color is listed as RHS(66) 78B, which is a strong reddish Purple.[1] I played a round of the guessing game when a plant labelled X55-9 and given to me by Robert bloomed—the flower was large, single, and White! A replacement from Robert conforms to the registration description.

Several years after this mix-up, Frank White addressed a regional meeting in Greenville, South Carolina, and correctly described 'Sherbrook' as being Purple and exhibiting doubling. The following week I received two telephone calls. One was from Don Wingate in North Carolina; he cited Frank White's description and said: "Mine is single and White." I could empathize. The same week, George Beasley called from Georgia and, citing Frank White's description, said: "Mine is single and fire-engine red." Obviously, neither had 'Sherbrook.'

The subsequent history of the Beasleys' red plant is also instructive. They had obtained the plant, labelled as X55-9, from a well-known southern collector and grower,

who had received cuttings and liners from Robert. The Beasleys found the red flower and the distinctive growth habit attractive and propagated the plant. This cultivar appeared in their Transplant Nursery list as 'Sherbrook Red.' Later, Wayside Gardens found merit in the plant and has marketed it as 'Flame Dance'. [2] This change of name was warranted, because the red plant has no verifiable connection to Gartrell's X55-9, and use of "Sherbrook" in the name might lead to confusion on this point.

How Can So Much Go Wrong?

Firstly, hybridizers or others selecting cultivars for naming are often too preoccupied with other matters to go through the tedious process of preparing descriptions in detail adequate for purposes of identification. (Of course, if—as is desirable—high standards and great selectivity are exercised in choosing cultivars for naming, the burden of preparing descriptions is proportionately reduced.) When a cultivar is named, the new name (technically, "cultivar epithet") should be registered with the appropriate registration authority for the genus.[3] This procedure is meant to protect the name of the cultivar from future application to another cultivar in the genus, thus eliminating a possible source of confusion. In addition, the fairly detailed description that must accompany a registration application becomes a matter of record. Unfortunately, even when a detailed description has been prepared for a cultivar, it may not be readily available to many growers and collectors.

Secondly, some growers and distributors (professional and amateur, commercial and private) fail to exercise due care to ensure that plant material they propagate and distribute is true to name. The causes of such failure are varied, ranging from ignorance of sources of information on plant descriptions to an attitude that, like nuts and bolts, plants are merchandise—and *caveat emptor!* For a retailer who relies on the reputation of his supplier, the latter attitude is perhaps understandable, if unfortunate. One hopes that those selling plants (particularly nurserymen) would develop sufficient interest and pride in their work to verify the identity of their stock using the best available descriptions. It should be noted that the plants themselves may contribute indirectly to mix-ups. In crowded plantings, a lateral branch from an adjacent plant may present a tempting cluster of branchlets to the unwary propagator. One should always verify that cuttings are being taken from the desired plant.

Thirdly, if one has never been interrupted while preparing cuttings, inserting them in rooting medium or transplanting them at later stages of growth, he may not appreciate the insidious possibilities for mix-up in labelling. I have made mistakes in labelling, have seen others do it, and have suffered disappointment from the results.

Despite good intentions and reasonable care, it happens—even the great are not immune.[4] Labelling errors, together with the loss of labels and weathering of labels to the point of illegibility, are the bane of those who propagate and grow substantial numbers of plants.[5]

Fourthly, genetic instability leads to interesting possibilities for propagation of plants that do not match the description prepared by the originator of a hybrid or a selection.[6] Because of their tendency to diversity in flower-color patterning, Satsuki azaleas are notorious for producing variation.[7] Many other hybrids share this characteristic to some degree, so that it is not uncommon to encounter variation in form or color on a given plant. The variation is often an attractive and interesting feature—indeed, variation in color-patterning was the reason for selection of the name 'Conversation Piece.' For some plants, however, variation in propagations may not be wanted. For example, B. Y. Morrison recommended that "all self-colored purple branches should be removed" from his 'Geisha.' [8]

Some variation that results from differing environmental and cultural conditions may not affect the character of asexual propagations. I suspect, for example, that variation in the degree of doubling on a given specimen is heavily influenced by the sequence of weather between time of bud formation and time of flowering.[9] A cultivar that is fully double under favorable conditions may "throw" semidouble flowers—or even some that appear to be single—under other conditions ('Jeanne Weeks'). A specimen of 'Sherbrook' that has reliably produced flowers matching the registration description produced out-of-season bloom of atypical form in late September 1986: fully double and flat-faced with two series of broad, rounded, overlapping petals. Distinguishing characteristics may be masked by 'cultural conditions; for example, in commenting on the differences between 'Herbert' and 'Purple Splendor,' Caroline Gable states; "I go by the way the plants grow, and that doesn't work too well with the over-fertilized plants you see in the trade." [10]

Our concern here is not with the relation of variation to aesthetic preference. Rather, we focus on the consequences of genetic instability for propagation and the subsequent identification of the plants so produced. Cuttings taken from a branch bearing flowers of atypical form or color pattern may result in a batch of plants with outward distinguishing characteristics materially different from those predominant in the original specimen.[11] A propagator may deliberately perpetuate such a variant vegetatively as a new cultivar. Selective propagation led, for example, to 'Girard's Variegated Gem,' which is a sport of 'Girard's Border Gem,' which is a sport of 'Girard's Rose'. [12] The propagation of sports

adds to the potential for confusion arising from genetic instability and offers the possibility of sporting's coming full circle to a reproduction of the original cultivar under a new name—a highly undesirable outcome.

An interesting example presenting just such a possibility has been cited to the author by William C. Miller III.[13] 'Omurasaki' (vivid purplish Red) gave rise to a sport that was selected and named by Dr. H. H. Hume as 'George Lindley Taber' (White, flushed light-to-strong purplish Pink). A White sport of 'George Lindley Taber' was subsequently named 'Mrs. G. G. Gerbing,' and in recent years a selfed sport of 'George Lindley Taber' has been propagated as 'Purple George Taber.' From the appearance of the latter cultivar, Mr. Miller suggests that 'Purple George Taber' may well be a reversion to 'Omurasaki', While only genetic studies could establish whether this is a case of identity or only close similarity, the possibility of reversion underscores the wisdom of conservatism in selecting and naming cultivars in which genetic instability may be a factor. At a minimum, cultivars being considered for naming should be grown and observed for many years to assure that an acceptable degree of stability is present in those characteristics for which the selection is being made. Following this practice would also contribute to avoidance of unnecessary naming of cultivars that are only look-alikes for plants already named and in distribution.

As interesting as is the phenomenon of sporting, the objective of asexual propagation is, in most cases, to produce plants that do *not* differ in distinguishing characteristics from the original form of the cultivar. Attainment of this requires care when taking cuttings to avoid branches on which atypical forms have appeared. If one likes the appearance of the variant forms on the stock plant or is too tender-hearted to wield the pruning shears, the branches to be avoided at cutting time may be flagged with colored plastic-covered bell wire (avoid yarn; it is likely to end up in a bird's nest). Ideally, plants resulting from growth of cuttings should be held until they have established their identity by flowering—a recommendation widely honored in the breach when small plants are distributed or exchanged.

Fifthly, however infrequent its occurrence, deception in plant propagation and distribution is deplorable. It not only results in depriving the originator of a cultivar of his due (whether monetary compensation in the case of a patented plant or goodwill and reputation in other cases) but also leads to massive confusion in collections. This confusion can mount exponentially when plants with bogus names (or legitimate names with bogus plants!) are propagated. Commercial propagators should be especially vigilant to ensure that cuttings used and plants distributed are true to name. This aspect of the misidentification and mislabelling problem is one that many azalea propagators, distributors, and buyers may never encounter. But the propagator or collector for whom correct plant identification is essential is well advised to be aware of the possibility of such an occurrence.

¹Morrison's recommendations in *Monograph 20* regarding the removal of sports have been much misinterpreted. It is not, as some suggest, that Morrison did not like or appreciate sporting. Rather, Morrison's advice was based on the practical consideration of preventing the unintentional propagation of numerous sports under the cultivar name. Ed.

War Stories

Mention misidentification or mislabelling to an azalea enthusiast and you may hear more about plant mix-ups and their causes than you bargained for. Certainly, these problems are not new. Caroline Gable recalls that 'Rosebud' and 'Lorna' ". . . were the classic mixup as long as 50 years ago. Koster's Nursery put out a free-growing version that was first called 'Koster's Rosebud' after the mistake was caught, and later 'Lorna'." [14] With the veritable explosion in the number of cultivars named in recent years, the chances for mixup have increased exponentially. To illustrate the nature of the problem, several examples suggested to the author by experience azalea collectors are presented below:

Hybrid group: Glenn Dale Name on label: 'Geisha'
Presumed cause no(s)²: 2,3

Distinguishing characteristics of named plant: Flowers 1-1/2 to 2 inches across, White with yellowish Green blotch, flecked and striped with moderate reddish Purple (Ridgway's Livid Purple)

Characteristics of plant received: Flowers 2 to 2-1/2 inches across, pure White with no blotch, flecked and striped with a color between deep purplish Pink and strong-to-vivid purplish Red (Ridgway's Spinel Red and Rose Color)—Glenn Dale 'Festive'

Note: The lack of blotch and, for plants grown under similar cultural conditions, the larger corolla diameter of 'Festive' should permit ready separation of these cultivars. Under lighting conditions appropriate for color evaluation, the differences in color of markings should be evident.

Hybrid group: Gable Name on label: 'Purple Splendor'
Presumed cause no(s)²: 1,3

Distinguishing characteristics of named plant: Flowers single, hose-in-hose, frilled, about 1-3/4 inches across, vivid reddish Purple, prospers in sun

Characteristics of plant received: Flowers single, hose-in-hose, frilled, about 1-3/4 inches across, strong reddish Purple, more compact growth than 'Purple Splendor,' broader than high, prospers in sun but color bleaches to a bluish Purple—Gable 'Herbert'

Note: Caroline Gable confirms that both 'Purple Splendor' and 'Herbert' are hose-in-hose; states that (at Stewartstown, PA) in each cultivar the back series of "petals" of the hose-in-hose flowers is not fully developed; also notes that 'Purple Splendor' has the better color, a more vibrant red purple," while the color of 'Herbert' is subject to bleaching toward blue.

Hybrid group: Satsuki Name on label: 'Gyokurei'
Presumed cause no(s)²: 2,3

Distinguishing characteristics of named plant: Flowers irregular double, rounded lobes, 2-1/2 to 3 inches across, White, often with vivid purplish Red flecks or selfed purplish Red

Characteristics of plant received: Flowers single, wide round overlapping lobes, 3 to 4 inches across, White, variously marked or selfed with light-to-strong Pink—'Meicho'

Note: Col. Pete Vines reports this situation resulted from the mislabeling and shipment of 'Meicho' as 'Gyokurei' by a major national grower, and that the subject plant has been further propagated and sold as 'Gyokurei' and 'Gyokurei No. 2' [15]

Hybrid group: Satsuki Name on label: 'Ukifune'
(probably meant to be 'Uki Funei')

Presumed cause no(s)²: 4

Distinguishing characteristics of named plant: White with red stripes, 2-1/2 inches across, leaves variegated with yellow spots and blotches

Characteristics of plant received: Flowers all red selfs

What Can We Do?

Individually and collectively, members of our Society can accomplish much to solve existing mix-ups and prevent new ones from occurring. As individuals, we can become better informed about the azaleas we buy, trade, propagate, and enjoy. As a group, we can use the medium of *THE AZALEAN* to accumulate, codify, and disseminate information about mix-ups. Using the scheme for recording data shown in the appended sample worksheet, members can submit to the editor of *THE AZALEAN* description of the anomalies they discover. From time to time these could then be made a matter of record in a special tabulation or article. This procedure could help reduce the population of misidentified plants and yield data for judging the relative incidence of the various causes of mixup. A "tickler" could be published prior to blooming season each year, encouraging members to check their plants and note identification problems.

In addition, we must all work conscientiously and consistently to ensure that propagation and labelling are done meticulously. While consultation of reference materials in chapter libraries can assist in the resolution of identification problems, many puzzles will remain. Learning more about the detailed characteristics that are effectively diagnostic in plant descriptions not only facilitates identification but also enhances appreciation of the beauty captured in the form and complexity of azaleas.[16]

SAMPLE WORKSHEET: AZALEA MISIDENTIFICATION AND MISLABELLING

Major Causes

1. Valid description not readily available.
2. Failure to use available description; lack of concern.
3. Accidental labelling errors.
4. Variation resulting from genetic instability.
5. Deceptive practices.

²See page 1 of this article for a listing of causes.

Hybrid group: Name on label:

Presumed cause no(s): 1 and 2, 3, 4 or 5

Distinguishing characteristics of named plant:

Characteristics of plant received:

REFERENCES

1. With the Royal Horticultural Society's re-issue of the *R.H.S. Colour Chart* in 1986, it becomes essential to identify the version of the chart being used in color citations—RHS(66) denotes the original, 1966 version of the chart.
2. Telephone conversation with Mary Beasley, Transplant Nursery, Lavonia, GA; Wayside Gardens Catalog (Spring 1986), Hodges, SC, p. 21
3. Galle, Fred C. *Azaleas*. Portland, OR: Timber Press, 1985, pp. 53-5; presents a useful summary of current registration procedures. See also Leslie, Alan C. "The Registration of Named Azalea Cultivars" (letter to the editor). *THE AZALEAN*, 8:46, 1986; Dr. Leslie is the International Registrar for the genus *Rhododendron*. Brickell, C.D., et al., *International code of nomenclature for cultivated plants—1980* (also known as the Cultivated Code), obtainable from The American Horticultural Society, Mt. Vernon, VA 22121, contains the rules and recommendations promulgated by the International Commission for the Nomenclature of Cultivated Plants.
4. Morrison, B. Y., Letter of August 22, 1949 to Ten Oaks Garden and Nursery (Attention: Mr. Adams) in the files at the Plant Introduction Station, Glenn Dale, MD. The letter requests the return to Glenn Dale of stock distributed as 'Samite,' together with any propagations from it. Morrison had discovered that the plant supplied to Ten Oaks did not fit the published description of 'Samite'.
5. In an October 5, 1965, letter to Dr. William Ackerman, In Charge, U.S. Plant Introduction Station, Glenn Dale, MD, B. Y. Morrison expressed frustration over labelling problems: "Labeling is always a trial. I use the metal tags you will see on the plants, but they do get

creased or bent or twisted or something and are not easily read, without glasses. . . in remaking a label that is old, there can be errors, too."

6. Briggs, D., and S. M. Walters. *Plant Variation and Evolution*, second ed. New York: Cambridge University Press, 1984, pp. 90-114; examines the nature of genetic mutation and abnormalities in plants, as well as the role of environmental and development factors in variation. See also Hartmann, Hudson T., and Dale E. Kester. *Plant Propagation: Principles and Practices*, third ed. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1975, pp. 187-97; treats genetic variation in asexually propagated plants.

7. Evans, Charles H., and William C. Miller III. "Pattern of Sporting." *THE AZALEAN*, 7:1-2, 1985.

8. Morrison, B. Y. *The Glenn Dale Azaleas*, Agriculture Monograph No. 20. Washington, DC: US Department of Agriculture, 1953, p. 44.

9. In addition to genetic factors, environmental factors are recognized by botanists as sources of variability. See, for example, Briggs and Walters. *op. cit.*, and Reynolds, Joan and John Tampion. *Double Flowers: A Scientific Study*. New York: Scientific and Academic Editions (Van Nostrand and Reinhold), 1983, esp. Chs. 5-7; provides insight on the troublesome problems of doubling, though not with specific reference to azaleas. It should be noted that, for plants that have been growing in a specific location under generally unchanged cultural conditions, weather will be the predominant environmental factor affecting variability.

10. Galle, Caroline. Note to the author, postmarked December 16, 1986.

11. Galle. *op. cit.*, p. 330.

12. Galle. *op. cit.*, pp. 196-7.

13. Miller, William C. III. Letter to the author, December 30, 1986.

14. Galle. *op. cit.*

15. Vines, Col. Pete. Letter to the author, November 30, 1986.

16. Emory, Debby K. "Describing the Azalea." *THE AZALEAN*, 5:19-22, 1983; a perceptive treatment that discusses important diagnostic characteristics often ignored—but note that Figure 2 may be misread as indicating the location of the ovary to be below the point of insertion of the other flower parts ("inferior") and not, as in azaleas, above the point of insertion ("superior").

THE AZALEA CALENDAR

April 27-29, 1987

9th ASA Convention and Annual Meeting
Eugene Oregon
Contact: Otto Henrickson
32316 Wilson Creek Road
Cottage Grove, Oregon 97424

May 1-3, 1987

8th Brookside Gardens Chapter Azalea Flower Show
Landon Azalea Garden Festival, Landon School,
Bethesda, Maryland. (see below)
Contact: Denise Stelloh (301) 840-1714

34th Annual Landon Azalea Garden Festival and Antiques Show, 6101 Wilson Lane, Bethesda, Maryland 20816. (301) 320-3200. Daily 10 a.m. to 5 p.m. 2 1/2-acre Perkins Garden with 15,000 azaleas. Standard Flower Show by the Azalea Society of America. 37 Antique Show Exhibitors. Sale of a variety of plants and shrubs. A benefit for the Landon Scholarship Fund. Free admission to the festival. \$4.00 admission to the Antique Show.

May 9, 1987

9th Brookside Gardens Chapter Azalea Mart
Charles Woodward High School Parking lot
Bethesda, Maryland
About 1 mile from interstates 495 and 270
Contact: Warren Grooms (301) 662-0459

May 5-8, 1988

10th ASA Convention and Annual Meeting
Washington, D.C.
Contact: Dr. Charles H. Evans
9233 Farnsworth Drive
Potomac, Maryland 20854

THE AZALEA CALENDAR lists upcoming Society and chapter activities. Items to be included should be forwarded to the Editor together with name, address, and/or telephone number of contact person(s) at least three months prior to the month of publication of *THE AZALEAN* in which the notice is to appear.

TO KNOW AN AZALEA WELL

William C. Miller III
Bethesda, Maryland

With the development of new azaleas each year, the need for accurate reporting of new cultivars and hybrid groups cannot be overemphasized. Considering the number of introductions that must have occurred in the 20-year gap between the second edition of the Lee book (1) and the new Galle book (2), it is easy to see how many new azaleas could slip by unnoticed or be overlooked between major texts. Given that comparatively few individuals register their azaleas (a formal process which results in a certain level of documentation), the confusion that has resulted from poor or non-existent documentation is immeasurable. After all, there is more to an azalea than just color and habit. The sad part is that there is little that can be done retrospectively once cultivars get loose in the market, because documentation is, by necessity, an "up-front" task in the introduction process.

If proper documentation is delayed, the potential for confusion grows at a frightening rate, because "accidents" of all sorts have a way of obscuring facts and confusing identities. Except in the rarest of circumstances where a cultivar is so uniquely distinctive, little can be done once the originator dies or the original plant is lost or falls from responsible hands. Undocumented, an azalea's survival rests with its attaining a degree of popularity due to some remarkable quality or to an artificial demand created by the trade. Another critical factor in this process is the role of the propagator (usually a nurseryman) as the focus for the introduction and distribution of new azaleas. Much depends on the propagator's attention to detail and the diligence with which tags are kept straight.

The opportunity for mixups occurs at every level of the distribution process from the originator, to the nurseryman, to homeowner who propagates azaleas as a hobby. The proliferation of the Satsuki hybrids in recent years has aggravated an existing problem which many propagators have heretofore been able to virtually ignore. Described as a "Nurseryman's Nightmare," the high degree of cultivar similarity and flower variability makes Satsukis a chore to describe and difficult to "manage." Unless extreme care is exercised by a propagator in the identification and selection of branches for cutting material, numerous sports resulting from somatic mutations (those mutations originating in cells other than germ cells) can be propagated under the original cultivar name. If the resulting "rogues" are not identified and culled, they eventually and, more importantly, geometrically lead to real confusion in the azalea community (3).

To their credit, many nurserymen provide descriptions of their offerings in their catalogs. Between major azalea texts, these catalog descriptions have been the only readily available source of basic, descriptive information on azaleas. Unfortunately, catalog descriptions

are quite variable in quality and usually lack sufficient detail to be of much value for identification purposes. That an azalea is "2-1/2 inches, red, and blooms mid-season" does not adequately narrow the field. Finally, it is the exceptional catalog that contains the history or background of the cultivars being offered.

What then are the elements that constitute a good description and what should be recorded to document an azalea for posterity? There are the obvious physical characteristics, but there are also "intangibles" that should be recorded as well.

PHYSICAL CHARACTERISTICS

1. Flower and leaf characteristics include shape, coloration, size, form, and any special or unique characteristics like stamen number, variegation, and significant fall bloom or distinctive fall foliage color.

2. Plant habit is important. A correlation of plant habit with plant age and geography is helpful. It makes a difference whether a cultivar is four feet high after three years, seven years, or eighteen years, and we have learned that environment can affect plant habit (4).

3. Disease or pest resistance or susceptibility is a frequently overlooked characteristic. Is a cultivar susceptible to or particularly resistant to powdery mildew or white fly and lace bug infestation? Do rabbits present a problem as with the Gumpos, Satsukis, and their derivatives?

4. Respective bloom periods are important factors. Many people have difficulty relating to "early, mid, and late." There are several alternative approaches that are useful, and the best approach is probably a combination of all the methods. One could choose to relate the bloom of a new cultivar to one of its parents—"before, after, or with" one of the parents. Another good approach is to relate a cultivar to the bloom of other very common cultivars that might be considered standards like 'Hinode giri', or 'Martha Hitchcock', or 'Shinnyo-no-Tsuki'. If "early, mid, and late" must be used, it would be desirable to provide date definitions referenced by locality since there is geographic as well as seasonal variability.

NON-PHYSICAL ELEMENTS

5. The parentage or cross in the case of hand pollination, the seed parent in the case of open pollination, and an "educated guess" in the event of a "volunteer" is a detail of major importance. The cross or formula, if both parents are known, should always be given with the seed parent first, an "X," and the pollen parent (e.g., 'Martha Hitchcock' X 'Luna'). If they are cultivars, they would be enclosed in single quotes whether they are registered or not.

6. The origin or significance of the cultivar names is important. Did you ever wonder who Amy, Baby Jill, Carl

Brosch, Debbie Ann, Eleanor Lord, and Frances Jenkinson were? Who knows who Tharon Perkins was? Is 'Oakland' named after a person or its point of origin? Is it Oakland, California or Oakland, New Hampshire? There is growing interest in the historic background, and this type of information is readily lost if not recorded early on.

7. What is the status of a cultivar? Has it been "introduced" or "registered"? If so, when and where? Publication of a description in *THE AZALEAN*, The Journal of the Azalea Society of America; *American Rhododendron Society Journal*; or in a nurseryman's catalog would constitute being "introduced." Registry through the American Rhododendron Society or the Royal Horticultural Society is pretty straightforward, and certain basic requirements must be met. If unregistered, are the cultivar names registerable? Do the names conform with the standards set forth by the International Code of Nomenclature for Cultivated Plants? It serves no one's interest to name cultivars improperly since registry is most desirable and renaming would be necessary. In the case of azaleas and rhododendrons, the publication of a name is not sufficient to establish the legitimacy of that name.

8. Does the cultivar have a show track record? Have cultivars repeatedly been judged superior in competitive shows? For example, 'Rivermist', a Harris hybrid, has been selected "Best-in-Show" in two of the last three years at the Brookside Gardens Chapter's annual azalea show. The skill and judgment of the entrant notwithstanding, 'Rivermist' is an excellent cultivar and its

competitive record supports that opinion.

9. If we are talking about documenting groups of plants (for example, from a particular hybridizer), is the list complete or will there be more additions to the group from cultivars still under evaluation? Collectors and historians will need that information. Any synonyms (aliases or secondary names and numbers) should be reported. Many hybridizers use numbering systems before they assign names to their plants, and frequently plants are distributed before they are named. This can be a real problem later on if there is no place to go for reference.

The importance of thorough documentation is not just an exercise in academics. To anyone who has bought a plant represented to be a particular cultivar only to discover the next year that it was mislabelled, the importance of documentation is obvious.

NOTES AND REFERENCES

1. Lee, Frederic P., *The Azalea Book*, 2nd Edition, D. Van Nostrand Co., Inc., Princeton, NJ (1965). Reprinted by Theophrastus Pub., Little Compton, Rhode Island.
2. Galle, Fred C., *Azaleas*, Timber Press, Portland, OR (1985).
3. The reader is invited to review the article entitled "Pattern of Sporting" which appeared on page 2 of the March 1985 *AZALEAN*. The article contains an original drawing by Ben Morrison which describes his experience with the phenomenon of sporting or somatic cell mutations.
4. Miller, W.C.: *Eriocarpum: A Case of Environmentally Modulated Habit*. *THE AZALEAN*, Vol. 6, No. 4, p 63-64 (1984).

AZALEAS AND COMPANION PLANTS AT BARNARD'S INN FARM

Polly Hill

Martha's Vineyard, Massachusetts

Last May I attended the annual meeting of the Azalea Society of America in New Jersey, and I discovered that many of you were very well informed about my plant introductions. However, not so much is generally known about *where* I grow them and *how* they look and behave in my environment. Today, I invite you to be my companions in a short picture tour around our summer home in Martha's Vineyard, which is called Barnard's Inn Farm.

For generations, our land was tended as a sheep farm. About 100 years ago, it was also an Inn. We have the old Inn sign as a memento. Barnard Luce, the Inn Keeper, was the last descendent of the original Henry Luce to live there. His ancestor, bought the land from the Indian Sachem in the mid 1600s, and one of his sons lived in the first house built there about 1690. The house still stands, with the changes and additions of 300 years. We call it the Homestead and use it as a guest house. My husband and I live in the Cowbarn, changed and updated by my mother in 1935. On this tour, we will roam over our 20 cultivated acres as well as the four seasons in time.

How one arrives at a course of action is not always

either clear or interesting, but I did begin in 1958 with the idea of growing an arboretum from seed. After nearly 30 years of time and with the help of my pictures you can see some of the results.

Now, please come in and look around after you enter our gate on the State Road in North Tisbury. You will notice that the native island pitch pine, the bald cypress from Delaware, the English hollies, and the Chinese tea crabapples are all happily growing together in our meager Vineyard soil. You will also observe that in every field, Japanese plants are especially well represented. In this connection, I would like to express to this audience my great debt to Dr. Tsuneshige Rokujo of Tokyo, an amateur plantsman known to gardeners on every continent, especially where the genus *Rhododendron* can be grown. He has consistently shared with me the seeds from his own crosses, various plants, and his vast store of information, ever since we first met in the 1950's.

My 1700 taxa fall into several groups. Conifers are important for windbreaks and background, as well as for their diversity and beauty. Hollies, camellias, and finally

azaleas I made my early specialties. Since then I have added stewartias, magnolias, and crabapples, as well as any other choice and desirable plant I came upon. You all know how irresistible good plants can become. Thanks to the horticultural courses at Longwood Gardens under Lois Paul, I learned to keep my records from the beginning, which has added a great deal to this project for myself and others.

Let us now visit the collections.

Abies Veitchii, the Veitch Fir from Japan, was a small seedling in 1962. The close-up shows its many cones.

Pinus Parviflora, the Japanese white pine, came from seeds Dr. Rokujo sent me in 1962.

Sciadopitys verticillata, the Japanese umbrella pine, on the left, *Abies procera glauca*, our own Western fir, and *Pinus koraiensis*, the Korean pine on the right, are all well adapted here.

Pinus densiflora umbraculifera, the Tanyosho form, unpruned, grew to a great ball in 25 years. Unfortunately, both the Japanese red and black pines are being killed by bark beetles all over the island.

Pinus densiflora oculis-draconis, the Japanese dragon-eye pine, makes a cheerful note of color.

Larix kaempferi, the Japanese larch, I find more graceful than the European or American species. Lois Paul brought me the seeds from Todmorden in Swarthmore, PA in 1958.

Cryptomeria japonica lobbi compacta came as rooted cuttings from the Hess Nurseries in 1961.

Cryptomeria japonica cristata. Here is the crested form I received from Longwood Gardens. Observe the curious matting of the needles. I take much pleasure in some of nature's oddities.

Sciadopitys verticillata is one of several conifers known as Japanese umbrella pine. This beautiful tree is slow to grow until mature. It thrives in full sun like most conifers. I brought it home from the Philadelphia Flower Show in a tiny container in 1962.

Chamaecyparis obtusa, the Hinoki cypress, I grew from Woodlot Company seed in 1958. All the temples of the great Shinto Shrine in Ise, Japan, are built of this wood, polished to a brilliant orange. The species is highly variable, producing many cultivars, including dwarfs.

Chamaecyparis obtusa crispisii. This bright little cultivar of the Hinoki cypress will not remain dwarf. It came from a Rare Plant Group exchange.

After this sampling of my conifers and their winter time aura I will take you to some Rhododendrons in their winter aspect.

Rhododendron metternichii from Oki Island. Dr. Rokujo sent me seeds gathered from Oki Island off the north west coast of Japan, in 1967. Of the 20 or so plants resulting, every one has a plastered, silky, cream-colored indumentum. In my zone 6 climate, with almost six months of freezing and thawing, going as low as -10°F , these plants get many false signals of spring. The buds may even start to swell in the fall,

and many are blasted before the end of May and time to bloom. What flowers mature are typical of the metternichi group and I will show these later.

Rhododendron makinoi in bud. The American Rhododendron society seed exchange provided seed in 1967 contributed by Takeuchi and Wada in Japan. The plants are maturing well now after 20 years.

Rhododendron yakusimanum 'Mist Maiden'. My plant is a gift from David Leach in 1969. To many of us this cultivar opened a new vista into Rhododendron growing.

Winter buds are fascinating in other genera as well.

Cornus kousa, the Asian dogwood has pointed flower buds, unlike our American dogwood.

Alnus Hirsuta. This Japanese alder was grown from seed from the National Arboretum with a Plant Introduction number. Perhaps you are aware that alders can manufacture their own nitrogen, as in the pea family. Consequently, they outstrip most other plants I grow in our poor soils, sometimes called impoverished soils. The male catkins can grow to ten inches and the cones are large enough to be ornamental.

Hamamelis 'Ruby Glow'. I feel that one can never have enough witch hazels. They bloom in coldest seasons when the first hope of spring is in the air. This picture is of a 12 year old graft from Hess Nurseries.

My undertaking to grow Camellias on Martha's Vineyard is visionary, admittedly, but at least I can show you some pictures of my efforts.

Camellia japonica. The seed is from Kessennuma in Northern Japan in 1960.

Camellia japonica in bloom, April 28, 1980, also grown from seed of wild plants.

Camellia japonica in bloom in 1980. This, too, is from wild seed. That was the last bloom I could show until spring of 1986, due to several years of severe winter conditions. But there has emerged a plant hardy and reliable through all those tough years, a plant too little known.

Camellia oleifera. This chinese camellia was photographed on November 22, 1985. It usually begins to bloom in late October and continues as long as severe frosts hold off. It is a charmer. Please look at the old plant in the National Arboretum.

Here are some plants in spring.

Soon after witch hazels and about the time of Forsythea comes *Corylopsis sinensis*, or winter hazel. My seed was a gift of Lois Paul from Swarthmore in 1959. This species is slow to start when young, but desirable and ornamental all year long.

Corylopsis spicata, a close-up in late April. This seed came from the American Horticultural Society seed list for 1969.

At last I can show you a Rhododendron in bloom. This little one is *keiskei* on April 25, 1986, blooming along with *Corylopsis sinensis* over the wall. Hardy oyclamen leaves are still shining in the lower right.

Amelanchier, our native shad bush, known as wild

pear on the island, blooms with the daffodils in May. One of early spring's many delights is *Cercidiphyllum japonicum*, the Katsura tree, opening its heart shaped leaves.

Our first cherry blossoms open on *Prunus* 'Hally Jolivette', the breath of spring in mid May. It is a hybrid of two Japanese species produced at the Arnold Arboretum.

Prunus incam 'Okame' is another hybrid cherry. This one was brought to the East Coast from England by Dr. Henry Skinner when he was at the Morris Arboretum.

Surrounding our walled fields and my arboretum is the wooded, untended land, primarily of oak trees. We maintain walking paths that we share with deer and other wild life.

Halesia monticola and a dead locust stand at a gateway to the north. In front of the Silver-bell tree is a Juniper selection of mine called 'Slender'.

Pieris japonica, a familiar ornamental grown from seed in 1959.

Pieris japonica 'Wada', a more colorful selection.

Please come into my Play Pen. Here you will find shelter from wind. The ten foot fence protects us from hungry deer and rabbits. Here there are many signs of spring and a wider selection of broad-leaved plants than is possible in the open fields.

Here is *Rhododendron dauricum album*, easily grown from seed, but very hard to root, I am told. *Daphne Mezereum* and the *Alberta spruce* accompany it in early May.

You are looking West down the Play Pen. *Rhododendron* 'Mist Maiden' and my *Makinoi rhododendrons* are outside the fence with *Rhododendron linearifolium* 'Seigai' inside in the foreground.

Rhododendron vaseyi, the pink-shell azalea, with 'White Find' among the seedlings.

Companion plants that never seem out of place are the Japanese maples. These three are all seedlings of *Acer palmatum* 'Nomura'. The plant which is red-leaved in spring gradually turns green until all three are the same color by September. It is interesting that all three have the same basic structure as the parent plant, *Acer* 'Nomura'.

Acer japonicum, the full-moon maple. Its seeds came from Dr. Rokujo in 1965. The *Camellia japonica* in the picture was a seed three years earlier in 1962.

Acer rufinerve, the rough veined maple from Japan has striped bark and superb racemes of seeds, as well as splendid fall color. It is far easier to grow from seed than is our native moosewood, *Acer pennsylvanicum*, at least in my early experience.

Rhododendron dauricum, the purple form.

Rhododendron mucronulatum 'Cornell Pink'.

Rhododendron keiskei album, a gift from Elinor Clark in 1976.

Rhododendron kiusianum Cultivars.

Rhododendron kiusianum 'Komo Kulshan'. This photograph is out of focus, but the plant is so beautiful I

could not resist showing it. It is a gift from Larry Albaugh in Everson, Washington. He collected its wild seed in Japan.

This is my plant I call 'Big Yak'. I am told it is a first generation hybrid of *yakusimanum*, from the American Rhododendron Society seed exchange in 1966. It is one of my number 66-005.

'Big Yak' close-up.

'Big Yak' in full color.

'Big Yak' in its white phase. It may grow to 20 X 30 ft. in time.

Rhododendron yakusimanum 'Pink Parasol' by David Leach. Another triumph of his.

'Pink Parasol' close-up, showing its brilliant bud color.

'Pink Parasol' in full flower, pale pink.

'Pink Parasol'. Its new growth begins snow white, then fades to green.

Rhododendron 'Samisen' is another #66-005 of mine, synonym BIF #1. It also is a first generation hybrid and sibling of 'Big Yak'.

'Samisen' with opening buds. I named it for the three-stringed instrument of Japan because of its three color phases when in bloom.

'Samisen' in full flower. In fall there is a flat rusty indumentum on the reverse of the leaves. It may reach ten feet in height with 15 or more feet in width. To me it has elegance at all seasons.

Rhododendron 'Libby'. The seed for this plant came from the white form of *kaempferi*.

'Libby' close-up. I find that colors of all *kaempferi* range from bright at first flowering to paler with age.

Rhododendron 'Corinna Borden', a powder pink sibling of 'Libby', also from white form of *kaempferi* seed.

'Flaming Mamie' is, I believe, my *nakaharai* X *kaempferi* that I refer to as 'Airport Red'. These two names are not registered.

Rhododendron kaempferi. This species is as distributed under a Plant Introduction number.

Rhododendron kaempferi var. *yezoensis* is my idea of a beautiful color of *kaempferi*. Its seedlings have volunteered with an equally fine color in at least two plants in my Play Pen. This choice seed is from Dr. Rokujo.

Ledum groenlandicum is an ericaceous plant at home in the damp, cold, northern bogs. It is pictured under another F-1 Yak in my #66-005.

Rhododendron 'Wheatley' front and 'Atroflo' rear with Oki Island *metternichii* in between. They are all in my so-called Himalayan meadow, which is a section of my Conifer rows interplanted with Rhododendrons.

Rhododendron metternichii from Oki Island. In this group many had buds that opened too soon.

The Play Pen looking to the East. A good pink on the left and a good low form on the right are both from Oki Island. OH-KI means great tree or honorable tree if I am not mistaken.

Rhododendron linearifolium 'Seigai' inside and *maki-*

noi outside.

Later in May in the Play Pen to the East.

Now our tour will visit magnolias and crabapples, some of which bloom before another group of May flowering azaleas.

Magnolia kobus. It took this one 20 years to flower from seed.

Magnolia 'Centennial', a star magnolia selection named for the Arnold Arboretum centennial celebration.

'Centennial' close-up. Some years pink coloring appears.

Magnolia sieboldii (synonym *parviflora*) from Longwood Garden seed in 1962.

Magnolia hypoleuca first flowering, not very good, on a '68 seedling from Japan.

Magnolia X *wieseneri* (syn. *watsoni*) a hybrid sent by Dr. Rokujo as a graft in '64.

M. wieseneri fruit aggregate. The seeds are released as the fleshy folds around them dry.

Magnolia hypoleuca 'Lydia', a beautiful, orderly tree form.

The flower of 'Lydia'. It has a lemon fragrance.

'Lydia', a closer look. This should make a splendid selection for a small property. It is another seedling gift from Dr. Rokujo.

Magnolia macrophylla 'Julian Hill'. This big white flower is 11 inches across. Also it only took nine years to flower from seed. The parent plant was growing in Guyencourt, Delaware.

Magnolia grandiflora. To plant lovers worldwide this species means magnolia. My flowers were 11 inches this summer and produced blossoms from June well into October, missing only five or six days. My secret: the old chicken yard it is planted in, and the wind shelter of a tall corner between buildings. A friend grew this plant from the seed of a Delaware tree.

Malus hupehensis 'Garlands'. The chinese tea crabapple is wonderfully suited to the exposure of my open fields.

Malus hupehensis 'Wayne Douglas' is almost my favorite tree at Barnard's Inn Farm. It is sturdy as an oak, handsome in flower, nearly as showy in fruit, disease free and trouble free. Even its winter aspect, rugged enough to look like an Arthur Rackham painting, is dramatic. The bark is shiny and black and the twigs resemble giant thorns.

Another tea crabapple and the Homestead beyond. A lovely azalea blooms at the same time, *Rhododendron vaseyi*, always a delight.

Rhododendron 'Martha Hitchcock' outgrows hungry deer nibbling at it and is now getting beyond their reach on the woods side of the west field.

'Martha Hitchcock' close-up. Mitsch Nurseries supplied this in 1961. I need not tell this audience that 'Martha Hitchcock' is a Glenn Dale azalea.

Rhododendron macrosepala 'Ladylocks' is my selection from Rokujo's seed in 1964.

'Ladylocks' close-up. It is richly fragrant.

Rhododendron 'Coral velvet', a unique, long-flowering beauty from Japan.

Rhododendron 'Bowie', the sturdy and handsome hybrid produced by Henry Skinner from a cross of our two natives, *chapmani* and *minus*.

Let us now walk through the arbor of European hornbeam, begun in 1964.

20 in a row of *Nyssa sylvatica*, beetlebung, or tupelo. They are pruned to a high hedge, making a shady canopy along a garden walk.

Zelkova serrata variegata is a gift from Dr. Rokujo.

An unidentified Kurume azalea behind a Chinese tree peony. This one grown from the seed of *Teruti nishiki*. The tree peonies take about seven years to bloom from seed.

More seedlings of tree peonies.

Peony 'Haru-no-akebono', and two other cultivars.

Peonia obovata alba in spring and its seed head in September. The seeds are blue and the red ones are aborted, truly spectacular.

Saunders hybrid peonies and *Phlox pilosa czarkana*. Herbacious peonies.

Peonies with *Stewartia* coming into bloom.

Stewartia ovata with purple filaments. The seed came from the lowland stand at Williamsburg, Va.

Stewartia koreana in bloom.

Enkianthus campanulatus, good bark, foliage in fall and flowers.

Enkianthus campanulatus var. *sikokianus* a rarity from the Arnold Arboretum.

Pterostyrax hispida in mid June from Longwood Gardens seed in 1959.

Our tour now leads to my double dogwood allee of 30 trees, all different and grown from seed in 1960—61.

They are *Cornus kousa*, the Asian dogwood.

Cornus 'Big Apple' is the tree on the right.

Cornus 'Square Dance' is the tree in the center, flowering over the three little girls.

The shapes of the partially opened flowers, still greenish white, vary from tree to tree.

These are the opening flowers of 'Square Dance'.

'Square Dance' fully open.

'Square Dance' close-up.

Cornus kousa 'Julian', chosen for pretty flowers.

Styrax japonica, a reliable plant for June.

Kerria japonica picta, a dainty note among heavier plants. The single *Kerria* I find very attractive.

Iris gracilipes, an enchanting iris from Japan and very easy to grow.

Do you all recognize this *Rhododendron* relative? Its parts are in threes. It is *Tripetaleia bracteata*, more interesting than eye-catching.

I could not take you on tour in New England stopping by a few lilacs.

My earliest bloomer is *Syringa oblata dilatata*, quickly grown from seed.

A *vulgaris* seedling I raised from the seed of 'Maud Notcutt' as a parent. Sown in 1973, after 12 years the flowers are heavy bodied and deliciously fragrant.

'Macrostachya' is a fine old cultivar, most reliable. One of the many daphnes we can grow is this choice species *Daphne cneorum*. It is easily kept going by layering in April.

Most of the native species of azaleas can be grown at Barnard's Inn Farm.

This is *prinophyllum*, formerly *roseum*. The seed came from the Royal Horticultural Society in England, of all places.

Rhododendron vaseyi, with 'White Find' among them. *Rhododendron atlanticum*, the Choptank River Strain, from near Dover, Delaware. The fragrance of this easy-to-grow plant fills the air after the lilacs are gone. It also volunteers here and there, to my benefit and pleasure.

Rhododendron calendulaceum, the seed came from Wayah Bald.

Rhododendron viscosum 'Delaware Blue'. The foliage is markedly blue among other greens, although not easily seen on film. This plant came from Pierson's Corner, Delaware.

Please correct me on this one. 'Prodigal' and 'Silver Mist' from Glenn Dale. Which is which?

Rhododendron 'Mai Hime' is a fine Satsuki.

Near the kitchen door to our Cowbarn where we live in summer. From the house forward are 'Yuka', 'Matsuyo', and 'Alexander'. 'Yuka' is my finest late white, not yet fully open. More 'Yuka' later.

Rhododendron 'Midori'. Dr. Rokujo sent a rooted cutting, unnamed for this one. I named it for a Japanese friend as it had Japanese roots.

Rhododendron 'Yaye'. (spelled Y-A-Y-E, rhymes with HI)

'Matsuyo' makes a flowery bed for a little snake. Can you see him? There are no poisonous snakes on Martha's Vineyard.

'Yuka' has several aspects. It is hard to guaranty any color when I take cuttings from a plant out of bloom.

Rhododendron nakaharai 'Mariko' Dr. Rokujo named for his daughter. It is the first plant of its pecies to be distributed in England and his selection.

Rhododendron nakaharai 'Mount Seven Star' came from seed collected wild in Taiwan at 800 meters. It is the only survivor of the pinch of seed I received.

'Mount Seven Star' close-up. The species *nakaharai* is endemic to Taiwan, first used for breeding by Dr. Rokujo.

'Joseph Hill' is from Dr. Rokujo's hybrid seed he sent me in 1961.

Another view taken this last June with 'Seigai' behind to the left.

Another view showing how it creeps where it can.

Rhododendron 'Alexander' in the Play Pen.

A view in our Wilmington, Delaware, garden showing how 'Alexander' will hang down from a trough or over a bank.

Back in the Play Pen, a sibling of 'Alexander' is spreading widely at ground level where unimpeded.

Rhododendron Michael Hill' is a very fast creeper in

June.

'Michael Hill' close-up.

The Play Pen looking East.

Looking West, the three girls are examining Susanah's plant. This shot shows why I named some fine plants for my family.

Rhododendron 'Susannah Hill' and 'Red Fountain'.

This close-up of 'Susannah Hill' shows petaloidy, an approximation of doubling.

'Red Fountain'. This also makes up well in a hanging basket.

Rhododendron 'Gwenda', my favorite of the beautiful Gartrell Robin Hill azaleas, with my 'Wintergreen' behind it.

'Gwenda' close-up.

A sampling of my North Tisbury azaleas to show their habit, with mountain laurel in bloom in the background.

'Hotline' on the left and 'Louisa' on the right.

Corinna Borden Hill is sitting in front of *Rhododendron* 'Pink Pancake', with three little *keiskei* 'Yaku Fairy' plants in front of her.

Rhododendron 'Marilee' is a vigorous, aggressive plant with a sparkling, eye-catching flower. It blooms quite late in the sequence of North Tisburies.

Rhododendron 'Trill'. The color is like 'Alexander', but the flower is larger and the plant is essentially upright; it neither creeps nor hangs down.

'Gabrielle Hill' left and 'Louisa' right, with 'Jeff Hill' and 'Michael Hill' in the background.

'Jeff Hill', the foliage is box-like.

'Jeff Hill' close-up.

'Late Love' at the foot of a fastigiate Yew tree.

The Play Pen in early July, looking East.

The new leaves growing on two Oki Island plants.

A recent introduction is my *Rhododendron yakusimanum* 'Wild Wealth', just beginning to flower after 24 years from seed. About its provenance, Dr. Rokujo wrote me, "the seeds of *Rhododendron yakusimanum* were collected near Hana-no-yego of Mount Miya-noura of Yakusima, by the college students". This is the only survivor of that packet which came from the very heart of Yaku Island, and the center of *R. Yakusimanum* occurrence. Registration has begun. This should be a breeder's treasure, as it is mine.

The seed of *Rhododendron bakeri* from Gregory Bald yielded me two selections, verified as to species by Henry Skinner and Fred Galle. One of them is 'Sizzler', a somewhat compact plant with light blue reverse to the leaf and this hot orange color. Here is a close-up of 'Sizzler'.

The other selection is 'Sunlight' which is possibly my favorite introduction. I need six plants of each to grow near my dogwood allée for a sparkling color combination, but, alas, they do not propagate easily, if ever. Please, someone, produce 'Sunlight' and 'Sizzler' by micro-techniques, tissue culture, or any other way. I really think many people would want them.

Since we are already into July, we must tour backward in time just enough to catch a June blooming clematis named 'Starfish.' This cultivar has already cap-

tered a preliminary commendation for the Styer Award. The bracts taper into long points as the plant matures. It is already in the hands of Arthur Steffen, a wholesaler of clematis.

Also in line for the Styer Award is *Clematis* 'Gabrielle', named for my daughter-in-law who is fond of purple things. It begins to bloom July 1 and ends September 1. Since it is a prodigious grower, I decided to build a bower for it to grow on. This is the result. On one post is *Clematis* 'Betty Corning', and all the others are *Clematis* 'Gabrielle'. The posts are dead locust trees (*Robinia pseudo-acacia*) with obliging bends at the right places. The color is far finer on the vine than on my film.

Many of us are familiar with the sweet autumn Clematis. It springs up everywhere from seed, uninvited. Controlling and guiding it in spring is recommended.

Indigofera pseudotinctoria 'Rose Carpet' is a very attractive ground cover shrub, blooming from August to frost. It is late to leaf out and subject to rabbit nibbling.

Lycoris sprengeri is a great beauty, but you must be patient, very. One, two, or three years may pass before you see a bloom. It sends up leaves in spring only, then flowers in fall only. Once planted, don't disturb it. This bulb of *Lycoris sprengeri* was planted in the fall of 1984, one of more than a dozen, and the only flower so far. That is no commercial bonanza.

Now we come to my last six azalea pictures. It is now August, late August.

Rhododendron prunifolium 'Hohman'. This has been crossed with *Rhododendron serrulatum*. Hal Bruce's

cross produced this plant.

Henry Skinner's cross produced this plant. I am naming it in honor of my friend, *Tsuneshige Rokujo*. July and August blooming azaleas are plants of the future, already in great demand on Martha's Vineyard.

This Katsura tree is the first to speak of fall.

Photinia villosa soon follows, an asian species.

Ilex serrata is the Japanese deciduous holly.

Enkianthus perrulatus inside the Play Pen. It is always an orderly plant.

Callicarpa japonica. Beautyberry is not too hardy in our area, so it is to be treasured in its good years.

Viburnum wrightii.

Viburnum dilatatum.

Cornus kousa. My dogwood allée is variable in its coloring from tree to tree.

Stewartia koreana.

Stewartia pseudocamellia.

The Stewartia forest, showing its diversity of fall color.

The Play Pen in fall, maybe like today.

And here is a group of Japanese maples that end our tour on a colorful note....

Please come again, whenever you are nearby, and walk around at your leisure.

Notes by the author from a slide presentation delivered at the October 11, 1986, meeting of the DelMarVa Chapter held in Rehoboth, Delaware.

"Azalea Classic"—CULTURE OF RHODODENDRONS AND AZALEAS

Guy E. Yerkes
Beltsville, Md.

The genus *Rhododendron*, in the botanical or technical sense, includes both rhododendrons and azaleas according to most of the authorities. Because of differences in general appearance time of flowering and adaptability, gardeners and nurserymen find it convenient to list members of the two divisions of the genus separately. While the general cultural requirements of both divisions are similar, rhododendrons are somewhat more sensitive to heat and exposure than most of the deciduous and small leaved evergreen or semi-evergreen azaleas. Nearly all of the species and varieties in cultivation are acid soil plants at their best only in fairly mild humid climates and in moist porous soil.

Rhododendrons are grown successfully in the milder portions of New England extending southward at the higher elevations favored with relatively cool summers, frequent showers, and freedom from prolonged drought. Another region suited to many choice varieties not sufficiently hardy for eastern conditions is the Puget Sound area and southward along the Pacific coast, where the climate is tempered and moistened by the influence of the ocean.

Azaleas of numerous species and varieties are important garden plants in the same regions. In addition, many of them are suited to the climate of the eastern Coastal Plain and the deep South, where the hot summers of the low altitudes are unfavorable for rhododendrons. They are grown also in some places in the Mississippi Valley and adjacent to Lake Erie where the necessary conditions are provided; but throughout the great interior region, the climate generally imposes conditions too harsh for them.

Within their climatic limitations, the wide range in the plant characters of azaleas affords forms suited to many garden and landscape uses. Some are large shrubs appropriate where garden space is ample and in open woodland in keeping with the natural landscape. Many others are smaller, meeting requirements for various effects in more restricted space. Numerous forms are evergreen or nearly so; others are deciduous. They differ greatly in winter hardiness. For temperate situations, a choice may be made from many species and varieties. Among them are some of the most floriferous and brightly-colored of all garden shrubs. A few types

are suited to more rigorous northern conditions, notably the native deciduous-leaved Mayflower, Flame, Pinxterbloom, and Pink-shell azaleas.

The selection of varieties that are sufficiently winter-hardy is an important factor in successful culture. The experiences of nearby gardeners and nurserymen familiar with the locality often prove very helpful in determining which ones to choose and which to avoid. Extremes of temperature may differ materially, however, even in the same neighborhood. While varieties of known hardiness logically are given first preference, the testing of doubtfully hardy or new ones is not to be discouraged if the site is unusually well protected. Sometimes, surprisingly successful results are obtained with sorts that could not be recommended for most places in the locality.

Besides the well-known varieties mentioned in the following short lists, there are numerous other meritorious sorts perhaps even more desirable where conditions suit them. Many promising new varieties have been introduced in recent years, some of which are gaining favor as their qualities become better known, and many others are on trial.

Three native rhododendrons are grown in many eastern gardens. The Catawba rhododendron, *Rhododendron catawbiense*, is the best known of all and is also one of the hardiest. It is regarded by many as one of the handsomest of hardy, broad-leaved evergreens, frequently reaching six or eight feet, often broader than its height. The flowers are lilac or purplish-rose, spotted with brown or yellow, in large terminal trusses. A natural strain of more compact form and slower growth (var. *compactum*) also is recognized as a valuable garden plant.

Numerous varieties known under the general designation of "Catawbiense hybrids" have been derived from the Catawba rhododendron by hybridization with other species, many of which are of uncertain origin. They vary considerably in hardiness as well as other characters. Where the hardiest sorts are needed, the following are recommended, being a combined choice made by several competent New England observers of varieties most dependable and pleasing.

White: 'Catawbiense Album', 'Album Elegans (late), and 'Album Grandiflorum'.

Rose: 'Roseum Elegans and 'Lady Armstrong.'

Deep Rose: 'Mrs. Charles Sargent' and 'Henrietta Sargent'.

Red or crimson: 'Atrosanguinum' (early), 'Charles Dickens', and 'Caractacus'.

Lilac: 'Everestianum'.

Purple: 'Purpureum Elegans' and 'Purpureum Grandiflorum'.

Among other highly regarded older varieties are 'Abraham Lincoln', red; 'Boule Deneige', early, white;

and 'Dr. H. Dresselhuys', aniline red.

Rosebay rhododendron (*Rhododendron maximum*) is a large spreading shrub valued for its winter hardiness, tolerance of shade too dense for most shrubs, and its large showy leaves. The light pink or white flowers open late and often are partially concealed by the foliage. It is particularly well suited to moist woodland and in some situations appears to advantage as background for smaller species.

Carolina rhododendron (*Rhododendron carolinianum*) is a compact, broad shrub, sometimes four or five feet in height and spread, with relatively small leaves. Among other uses, it is an attractive addition to an azalea garden, with its evergreen foliage and rose-pink or white flowers which open about the same time as some of the azaleas. It does well with only a little protection from sunshine but tends to grow straggly and blooms indifferently if the shade is too constant.

The most popular garden azaleas are of Asiatic origin. They have a wide range of bright colors including white, purple, red, orange, yellow, and all shades of pink. Several quite divergent types exist among them.

Torch azaleas (*Rhododendron obtusum* var. *keempferi*) are sufficiently winter hardy for eastern New England and are well suited to milder conditions further south. The plant is rather erect, commonly four or five feet tall. The vivid carmine-pink or red flowers are borne in profusion. The flowers are at their best when partially shaded, as they have a tendency to bleach in the hot sunshine. Several hybrid varieties from it with larger flowers, equally hardy and adaptable, are: 'Atlanta', large purple; 'Carmen', rose-pink; 'Fedora', deep pink; 'Mary', deep rose; 'Othello', brick red; and 'Purple King'.

Kurume azaleas are classed as *Rhododendron obtusum* var. *japonicum*. Although closely related to the Torch azalea they are not so hardy. Many of the varieties are low, compact evergreen shrubs or can be kept so by pruning. Their relatively small size, exceedingly floriferous nature, and bright colors make them especially valuable for small gardens and formal situations, and they are favorites in larger gardens as well.

A number of varieties of this type have proved fairly dependable in Maryland near the District of Columbia where sub-zero temperatures occasionally are encountered for short periods. Among these are: 'Amoena', rosy-purple; 'Amoena Coccinea', bright red; 'Benigiri', deep red; 'Cattleya', lavender; 'Christmas Cheer', brilliant red; 'Kirin' ('Daybreak'), light pink; 'Debutante', salmon pink; 'Flame', madder red; 'Hinomayo', clear pink; 'Hinodegiri', ruby-red; 'Sweet Lavender', bluish purple; 'Sakurugiri', white, edged with pink; 'Snow', white; 'Sweetbriar', pink.

Additional very desirable sorts, hardy enough for the Coastal Plain section from Virginia southward are: 'Hoho' ('Apple Blossom'), white, tinted pink; ('Coral Bells'), shell pink; 'Firebrand', vivid red; 'Hortensia', soft pink; 'Azuma Kagami' ('Pink Pearl'), light center shading to deep pink; 'Salmon Beauty', salmon Pink.

The tender azalea varieties, which are prominent

shrubs in southern gardens, are commonly listed as "Indian Azaleas". They are fast-growing, large, evergreen shrubs with profuse masses of large flowers, at home along the Atlantic and Gulf coasts from North Carolina southward. In the vicinity of Mobile, Ala., Charleston, S. C., and in other sections with similar climate, there are very old plants still thriving, with a breadth of 20 or more feet. Among preferred varieties are: 'Brilliant', deep pink; 'Coccinea Major', orange-red; 'Concinna', rosy lilac; 'Criterion', pink, streaked with white margin; 'Duc de Rohan', salmon pink; 'Elegans', light pink; 'Fielder's White', large pure white; 'Formosa', rosy-purple; 'George Franc', large salmon pink; 'Glory of Sunninghill', vivid orange-red; 'Mme. Dominique', the largest late pink; 'Orchid', early; 'Phoenicia', pinkish-purple; 'Pride of Dorking', deep red; 'Pride of Mobile', watermelon pink; 'Prince of Orange', orange-red; 'Vittata Fortunei', variegated; 'William Bull', double, orange-red.

Indica azalea, *Rhododendron indicum* (*Azalea macrantha*). This Japanese species is quite distinct from the tender forcing varieties of florists and from most of those of southern gardens commonly referred to as "Indian azaleas." It is sufficiently hardy for well-sheltered gardens in the vicinity of New York City. The growth is slow, forming a low, spreading, compact shrub with attractive evergreen foliage and late flowers. Representative varieties are: 'Balsaminaeflora', double salmon; 'J. T. Lovett', single pink; 'Macrantha', salmon; 'Hakatahiro', white; 'Benekirishiro', double red.

Rhododendron mucronatum, best known from the variety commonly named 'Indica Alba' by nurserymen, is an attractive evergreen shrub hardy in Washington, D. C., and quite widely grown southward. It has large white single flowers. Other varieties are fairly well known and widely distributed.¹

The variety 'Maxwelli' (A garden form of *Rhododendron pulchrum* or *R. phoeniceum*, known in the trade as *Azalea maxwelli*, but not the *R. maxwellii* of botanists) is another noteworthy, low-spreading evergreen shrub with large rose-red flowers. Its resistance to cold is similar to the Kurume azaleas.

Several deciduous-leaved Asiatic species and many varieties derived from them are outstanding for their large yellow, red, and orange flowers. The Ghent hybrid varieties are prominent in this group. *Rhododendron japonicum* is a more robust shrub notable for its hardiness and large flowers. Derivatives of *Rhododendron molle* with similar flowers are not quite so hardy or vigorous. These species and varieties are hardy in eastern New England and central New York but do not thrive in the hot summers of the South.

Royal azalea (*Rhododendron schlippenbachii*), a

¹Like many articles from this period, reference is made to *Rhododendron obtusum* and *R. mucronatum*. This is consistent with the taxonomic theory of that time. Today, however, these former species no longer enjoy species status but are considered to be of hybrid origin. It is important to maintain historic perspective when reading literature from the past. Ed.

Korean species, is regarded as one of the most desirable of the deciduous azaleas where it is suited. It is hardy but is sometimes slow in making vigorous growth. The shell-pink flowers are large and are displayed to advantage on the plant.

Korean azalea (*Rhododendron mucronulatum*) is distinctive for its hardiness and very early bloom. The bright rose-purple or magenta flowers appear in March or April, a month or more earlier than most azaleas.

Of the 15 or more species of azaleas native to the United States, several are very desirable, hardy, garden shrubs. All of them are deciduous.

Flame azalea (*Rhododendron calendulaceum*) with yellow or orange flowers is one of the most attractive of all deciduous native shrubs. It prefers conditions similar to those for the Catawbiense rhododendron—light shade and relatively cool summers.

Pinkshell azalea (*Rhododendron vaseyi*) is very hardy and adaptable with abundant clear pink flowers that open early in the spring.

Mayflower azalea (*Rhododendron roseum*) is outstanding for its extreme hardiness and for its sprightly pink, delightfully fragrant flowers.

Pinxterbloom azalea (*Rhododendron nudiflorum*) is notable for its adaptability to various soil, moisture, and light conditions.² The flowers are light pink with sweet fragrance.

Coast azalea (*Rhododendron atlanticum*), although not so well known as others, is a meritorious small shrub native to the Coastal Plain from Pennsylvania to South Carolina. It is particularly well suited to the hot summers of this low altitude. It grows only a foot or 18 inches tall and spreads by rootstocks. The fragrant flowers are white or pink.

Western azalea (*Rhododendron occidentale*), a native of Oregon and California and the only wild azalea west of the Rocky Mountains, is a tall, well-branched shrub, covered in the spring with white or pink flowers distinctively marked with yellow. It is prized in the Pacific States but is not well suited to eastern conditions.

Plants of the native rhododendrons and azaleas are commonly obtained by nurserymen from the sections in the Allegheny mountains where they occur in great abundance, rather than by propagating them. The garden value of these collected plants depends on their vigor and on the way they are handled. Plants in the wild are often overcrowded or in positions where they grow very slowly. When dug up and reset, such plants may require a long time to recover. But if vigorous individuals are selected and then properly dug and cared for, they usually are satisfactory. A plan that results in better plants is to prepare the plants in advance by cutting back and allowing new tops to grow for two or three years before digging them. A more expensive common practice by which first-class plants are obtained is to move them to a nursery and, after one season, cut them back to the base, then re-grow the tops for three or four

²Note that *R. roseum* and *R. nudiflorum* are now called *R. prinophyllum* and *R. periclymenoides* respectively. Ed.

years.

The named varieties are propagated usually by cuttings, layers, or grafts, the chosen method depending on the nature of the variety or the available facilities. Reliable duplicates of a variety are obtained by any of these means. Rather exacting care in greenhouse and nursery is necessary for several years to produce specimens ready for the garden.

Small plants are far more tender to cold and easily injured by other adverse conditions than large ones. Sturdy, well-branched plants eight inches to a foot or more in height or spread are about the minimum size satisfactory for garden conditions in most cases. Many gardeners, however, succeed with small plants, available at comparatively low cost, by growing them in cold-frames, giving them special care for a few years until they develop to the desired size for bedding out.

Various situations provide conditions for success with rhododendrons and azaleas. Rural settings such as openings in woodland, the banks of small streams not subject to overflow, and places near large bodies of water, offer a combination of natural advantages where the American species may be better suited than most other ornamental shrubs. Sites with irregular contours, moist slopes sheltered by higher land, ravines, and open places among rocks may afford very good conditions for various types, especially if shaded a little by tall trees.

Smaller-sized varieties of Kurume and other azaleas often succeed in small city plots crowded between tall buildings and in the courts of apartment houses. Larger city and suburban gardens afford good sites for the compact small varieties in groups or beds. Where so used, the north and east exposures are preferable in order to benefit from the protection afforded by the building; soil conditions are not always favorable very close to the house foundation. Both rhododendrons and azaleas are desirable features in a landscape plan when grown in large groups for mass effect at the borders of lawns or in large beds and also as single specimens.

Shelter from strong wind is quite important for most species, especially for the evergreen types. Coniferous trees with low branches are very desirable for their year-round effectiveness as windbreaks and for background against which the plants and flowers are displayed to advantage. Closely-planted shrubs of other kinds also aid greatly in breaking the force of the wind but later on they must be prevented from encroaching on the space for the rhododendrons and azaleas if growth is too rapid. They can be placed near the trunks of deep-rooted trees like the oaks with good results if the branches are high enough to admit good light but are at a serious disadvantage from root competition when near such shallow-rooted kinds as elms and maples.

For most rhododendrons, a very favorable condition of light is obtained where sunlight alternates with the shadows from the branches of tall trees. While most varieties will tolerate denser shade, they will not grow so vigorously nor flower so freely as in partial sunlight.

Azaleas also will grow well in similar light. Usually they are benefited by a little protection from midday sunshine, although most of them are really sun-loving plants thriving in full exposure to light if they have ample moisture. In sunlight, the tendency is to produce many short vigorous lateral branches with most of the twigs producing flower buds. If shade is too dense, they grow taller with fewer branches and a sparser development of flower buds.

Exposures that dry out quickly and are parched in hot weather seldom give satisfaction, even with extra attention to timely watering. The opposite conditions—places where water collects and may stand for some time in wet seasons—likewise are to be avoided unless effective measures of underdrainage to carry off the excess water are taken before the plants are set out. Stagnant water at the roots has injurious effects difficult to overcome later when the plants are in place.

The distance apart to set the plants varies with the site of the varieties and the effect desired from them. The rhododendrons will spread at least six or eight feet after several years, and some of the larger azaleas will need nearly as much space eventually. The Torch azaleas will occupy five to six feet and Kurumes at least four feet. Closer planting is advantageous for appearances during the first three to four years, and then when they begin to crowd, the stand can be thinned out and the surplus plants reset in other locations. Plants of any size can be moved without much risk if the work is done properly.

Sandy loam containing a plentiful quantity of organic matter is considered the most desirable soil for rhododendrons and azaleas. Other kinds of soil can be modified without difficulty, however, to meet the essential requirements. The physical structure is more important than the basic type. For satisfactory results, the soil must be porous enough to provide ample aeration in the root area and allow the free percolation of water, with good capacity to retain moisture. Clay soil is much improved by the addition of coarse sand to loosen it. Light sandy soil is benefited by mixing clay loam with it in order to increase its water-holding capacity and reduce the loss of soluble nutrients by leaching.

The degree of soil acidity regarded as resulting in the best growth ranges is from pH 4.5 to 5.5. With other conditions favorable, the plants may do well in soil approaching neutral, but they will not thrive in alkaline soil because some of the nutritive elements required by this particular class of plants become insoluble and unavailable.

State experiment stations, farm bureaus, and county agricultural agents are equipped to make accurate soil tests for acidity. Small, inexpensive outfits for testing are available from garden supply firms. These depend on color changes in reagents. The rough determinations so obtained are usable for most practical garden work.

In a great many localities within the range of climate suited to rhododendrons and azaleas, the natural soil is already more or less acid and requires little special

preparation besides the addition of acid-bearing organic matter. Such slowly decaying materials as oak leaves, upland peat, old sawdust, granulated bog peat, partly rotted roots, and the like are valuable for this purpose as they improve the physical character of the soil during the successive stages of slow decomposition.

Such materials as ordinary garden compost of grass, weeds, straw, cornstalks, and soft leaves, decay too quickly, tending to "sweeten" the soil after a few months.

Oak leaves, after being piled for one or two years make one of the best of materials for mixing with the soil. Upland peat, also highly regarded, is the product of leaves and woodland debris, often forming a spongy layer under stands of old oak and other trees growing in uplands where the underlying soil is acid. The fibrous upper part of such a layer, of a rather light brown color, is the best. The lowest part, darker in color and so disintegrated that the vestiges of stems and leaf veins have disappeared, is much less desirable although usable in the soil mixture.

Sawdust that has weathered at least a year is a good source of organic matter. The reason for weathering is that fresh sawdust has the effect of retarding the growth temporarily unless the soil is unusually rich in nitrogen. This is explained by the action of micro-organisms which increase so rapidly that they assimilate more nitrogen than is found in the fresh sawdust. They then compete with the plants for nitrogen in available or soluble form contained in the surrounding soil. The deficiency can be met by the addition of nitrogen. After the sawdust begins to decay, the depressive effect is greatly reduced or disappears so that partly decomposed sawdust can be used safely in liberal amounts. In a comparison at this Station of different kinds of sawdust in the soil for azalea plants in pots, no measurable difference in results was found in sawdust of oak, pine, cypress, poplar, and birch. Sawdust contains very little plant food.

The necessary amount of organic matter to be added depends on the nature of the basic soil. Some favored locations may already contain a sufficient quantity, little special preparation being needed to support thrifty growth. In many other situations, a depth of four or five inches spread on the beds and well mixed with the soil will be satisfactory. If the plants are set out in holes without preparing beds, a good plan is to mix loam with organic material in about equal proportions by measure for back filling to replace the soil taken out.

Inorganic chemical substances can be used effectively to acidify neutral or slightly alkaline soil. Although they do not have the beneficial properties of peaty material on soil texture, they are often used with good results to supplement rather than replace organic matter. Aluminum sulfate³ has been used and recommended more than other substances for this purpose. The proper amount to apply depends on the degree of acidity already present in the soil. The recommended rate of application is two to four pounds per 100 square feet

scattered on the surface and then watered to dissolve it and carry it down to the roots. Powdered sulfur is another acidifying substance with an effect somewhat slower than that of aluminum sulfate and effective for a longer period. In recent years its use has been increasing. It is applied at the rate of one to one-and-one-half pounds per 100 square feet. Neither of these substances has value as fertilizer. Their sole purpose is to promote a more acid condition.

The best time for moving rhododendrons and azaleas depends on the climate and the local conditions. In the North, early in the spring before the leaves start is generally considered the most favorable period. Further south, transplanting can be done fully as successfully at other times in the dormant season—in the fall or during the winter when the ground is not frozen. Azaleas can be moved about in the garden at less favorable times, also, even while growth is active, without serious shock if some extra care is given to avoid the loss of too much moisture from the leaves and roots. It is a common practice for nurserymen to display azalea plants for sale late in the spring when they are coming into bloom. This affords opportunity for a customer to select the desired colors; and if such plants are kept moist and protected until they are re-established they can be transferred readily to the garden with very good prospects of satisfactory results. If the weather is warm, such plants need daily syringing and protection from wind and direct sunlight for several days after being set out.

Due to the compact growth of the roots the plants are easy to dig and handle with the soil held intact by burlap or similar fabric. Although they stand shipment well, the roots are very small and can be injured quickly by exposure. When a shipment is received, it is always advisable to moisten the plants soon after they are unpacked. The water in the soil usually needs replenishing by immersing the ball for several minutes until they are saturated after which they are ready to be set out.

It is desirable to make the holes considerably larger than necessary to receive the roots in order to provide room for a sizable quantity of peaty soil for replacement. When the plant is put into place, the twine can be cut and the burlap removed or cut away from the sides. While the soil is being pressed in around the roots is the time to adjust the plant so that it stands at the same depth as grew in the nursery. The roots grow near the surface where aeration is ample and will not thrive if covered too deeply. Water to saturate all the soil soon after transplanting is helpful, even though it is already moist, in order to bring the new soil into still closer contact with the roots. Until the plants are well established, the balls of roots, which may dry out faster than the surrounding soil, must be kept moist. A mulch put in place soon after transplanting aids in maintaining favorable soil conditions.

Moisture in adequate though not excessive amounts is one of the principal requirements of rhododendrons and azaleas. The small roots are most active within a few inches of the surface where they are soon damaged

by drought. If the soil is not moistened sufficiently by timely rainfall, watering is especially necessary for plants recently set out. During the period while they are in bloom, more water is used by the plants than at any other time. When blooming plants are watered, it is desirable to avoid sprinkling the tops, as water may cause unsightly spots on the flowers. At other times, sprinkling or syringing the tops occasionally is beneficial in addition to supplying adequate water to the soil during the summer growing period.

The buds for the next spring's flowers are developed during the summer and fall. Any severe check in growth by lack of water during this period causes a reduction in the number of buds set. If the drought continues until the leaves wilt, the plants themselves may be stunted and become more susceptible to additional injury from cold the following winter.

When watering, it is advisable to soak the earth to a depth of several inches to insure reaching all the roots and then to withhold water for several days or until the need for it appears. Although ample moisture at the roots is essential, excess water or a sodden condition in the soil is unfavorable.

A year-round mulch maintained at a depth of two to five inches is very beneficial in several ways. Beside reducing fluctuations in temperature it equalizes and conserves moisture for the roots. If made of slowly-decaying acid-bearing materials it tends to maintain the necessary amount of acid in the soil under usual conditions without recourse to applications of chemical substances. It aids in weed control by preventing weeds from starting. When the material decays, it gradually forms a residual layer in which the roots find the best conditions for development.

Oak leaves are among the best of materials. Acid peat moss, pine needles, forest debris, sawdust, wood shavings, and waste excelsior also meet requirements for a good mulch. A depth of four or five inches of the coarser material is desirable while two inches of peat or sawdust is enough to be effective. These last two are somewhat easier to use on young plants as they can be spread deep enough without covering the foliage. They may be preferred, too, for their pleasing dark brown color in formal gardens or other places where coarse litter might be regarded as unsightly. Late in the fall is a good time to replenish the mulch for added winter protection.

The best way to control weeds is to pull them out by hand before they gain foothold strong enough to compete with the plants for moisture and nutrients. Tillage with the hoe or other usual garden tools is to be avoided because any disturbance of the soil may interfere with the shallow roots.

Rhododendrons and azaleas frequently are placed near shrubs or trees of more robust growth and often appear to advantage in such an association, yet they resent overcrowding. It may become necessary occasionally to prune back the faster growing plant neighbors in order to admit plenty of light at the sides to

encourage the plants to spread and develop their natural form.

Moderately fertile soils that have been improved by organic matter and kept mulched commonly have sufficient available nutrients to support satisfactory growth without added plant food. After the plants have become large enough for a good display, a moderate rate of growth may be as productive of flowers as a rapid or forced growth. As long as the plants continue to have a thrifty appearance and normal deep green color little, if any, fertilizer is needed. On the other hand, if the plants lack vigor and have yellowish foliage early in the summer due to impoverished soil, they can be greatly benefited by fertilizers from both organic and inorganic sources that are acid in reaction. The use of fertilizers is of particular value for young plants in the nursery where the purpose is to encourage as rapid growth as is consistent with proper maturity.

The most effective period for applying fertilizers is during the early part of the season. Late applications may cause active tender growth to continue until late in the fall when injury from freezing may result. Thorough watering after applying fertilizers hastens their availability to the plants and lessens any danger of injury from them.

Cottonseed meal has been used in many places and is perhaps the best known of the fertilizers for rhododendrons and azaleas. It is a good source of nitrogen, the element most generally deficient, and also contains small amounts of phosphorus and potassium. It is applied on the surface over the areas occupied by the roots and can be used safely at the rate of two or three pounds per 100 square feet.

Soybean meal, which may in the future be more commonly used for fertilizer, has qualities similar to cottonseed meal. At this Station, in nursery beds of sandy soil unusually deficient in nitrogen, very good growth response has been secured from soybean meal. Two applications are found desirable under the conditions here. The first is broadcast over the surface of the beds soon after the plants are set out in the spring and the second in June five or six weeks later. Each application is made at the rate of 2 pounds per 100 square feet.

A mixture of two pounds of cottonseed meal with one pound of ammonium sulfate has given excellent results at the North Carolina Station at Raleigh. It is used at the rate of 1 to 2 lbs. per 100 square feet. Another formula that has been recommended is made up with cottonseed meal ten lbs., superphosphate four lbs., and sulfate of potash two lbs. The rate of application is two to two one-half lbs. per 100 square feet.

A fertilizer analyzing about 4-6-8 has given satisfactory results in the South. This is composed of:

28 pounds cottonseed meal
10 pounds ammonium sulfate
35 pounds superphosphate
17 pounds potassium sulfate
10 pounds aluminum sulfate³
100 pounds TOTAL

The ingredients are mixed thoroughly and applied at the rate of about 2 pounds per 100 square feet. Mixtures of the same materials, frequently varying in proportions, have been used with good results in other sections.

In the formula given above, the nitrogen is from the inorganic ammonium sulfate, which becomes available very soon after it is applied, and also from the organic cottonseed meal, a little slower and more lasting in its effect. The aluminum sulfate is added to increase the acidity³. Ready-mixed fertilizers, approximating the same analysis but not necessarily with all of the same materials and prepared especially for azaleas and other plants with similar requirements, are offered by dealers. Their use avoids the necessity of buying the several ingredients separately and the work required to mix them thoroughly. The usual commercial fertilizers for garden and field crops are not recommended, as they often contain sodium nitrate and lime in alkaline form toxic to this class of plants, although quite well suited to the crops for which they were prepared.

Azaleas sometimes develop an unhealthy condition in the summer with leaves near the tips of the growing twigs having yellowish color while the leaf veins remain green. Later, two tips of the leaves turn brown. Often only one or a few plants in a bed or group have this appearance, in contrast to the normal plants. The diseased appearance is a form of chlorosis and is easily distinguished from the light green or yellowish color which affects all the plants where the nitrogen supply becomes inadequate. It is due to lack of iron and is an indication that the soil is neutral or alkaline, the iron becomes unavailable to these plants.

The chlorosis can be remedied temporarily by spraying with ferrous sulfate (copperas) dissolved in water in the proportion of three ounces to four gallons. If lack of iron is the cause, improvement can be observed within a few days after the spray is applied. More lasting improvement can be effected by treating the soil with sulfur or aluminum sulfate.³

The main use for pruning, other than the removal of dead or injured branches whenever they appear, is to modify and train the growth to the desired form. The different types differ widely in growth habit and in many cases the distinctive typical form of a variety without alteration by pruning will be preferred. Most varieties develop into attractive plants unaided by an process of training where they have sufficient space and ample light. They can, however, be made more bushy and compact by pinching off the terminals or cutting back the growing twigs about half way when these shoots are four or five inches long early in the summer. This induces branching and spreading, often resulting in more flower-bearing branches. It is done in the early part of the season so that the new shoots will have time to grow

out and develop flower buds before fall. The need for this light pruning occurs most often where it is desired to keep the plants low or formal in outline and in shady gardens where there is a tendency to an open or unsymmetrical style of growth due to crowding or to lack of light. If they have already been allowed to grow too tall, for the best effect they can be brought to the wanted height by more severe cutting back. This may be done to advantage before growth starts in the spring, or, if the plants have flower buds it is desired to bring into bloom, the work can be delayed until after the flowers have fallen. Pruning off the older wood will sacrifice some flowers the next season but this loss may be well repaid in the future by the improved form of the plants and more abundant flowers.

In the spring before growth starts is a favorable time to inspect azaleas for winter injured branches, easily recognized by the bark being split and separated from the stems. By cutting these back to live uninjured wood, new growth is encouraged and danger of invasion by fungi is lessened. This is the best time also to remove any dead or overcrowded, non-flowering wood from the interior of the bushes.

The danger of winter injury is lessened by attention to thorough watering in the fall to assure ample moisture before the ground freezes and by replenishing the mulch. Where the plants are not well sheltered, boughs of evergreen can be used to advantage as partial screens from too much sunshine and as snow traps. To protect young plants, glass-covered coldframes with additional coverings of mats of straw during the coldest periods are desirable. Where the winters are comparatively mild but subject at times to temperatures much below the freezing point, a combination of a deep mulch and a canopy of burlap stretched over frames, or lath shades to admit about half the sunlight may be satisfactory. These measures usually are sufficient for the varieties that are hardy in the normal winters of the section. They may not be entirely effective, however, against exceptionally cold weather or abnormally sudden changes in temperatures.

Winter injury may cause rhododendron leaves to turn brown in spots or along the margins or tips. Fungi and parasites that would not attack uninjured leaves may invade and enlarge the damaged areas. The spread of such injury usually ceases with the return of favorable conditions without the need for corrective treatment. On evergreen varieties of azaleas a common form of winter injury is easily recognized in the spring when the bark is found to be split and separated from the twigs or, in more severe cases, from older branches. This injury causes severe losses among young plants not sufficiently protected, by girdling the stems near the base. Older plants are less subject to such serious damage, as the growth naturally is a little slower, the wood reaching a more mature state before cold weather.

A summary of principal requirements for the successful culture of rhododendrons and azaleas may be stated very briefly:

³Today there is general concern over phytotoxicity associated with the use of aluminum sulfate. We would suggest that iron sulfate would be a better constituent for increasing acidity. Ed.

1. Select species and varieties that are sufficiently hardy for the locality and otherwise naturally adapted to the site and desired effect.
2. Protect the plants from extremes of heat and cold and from strong winds.
3. Acid soil, preferably from pH 4.5 to 5.5, the range most common in the soil where these plants grow in the wild.
4. Abundance of organic matter in the soil of the kinds that tend to maintain acidity.
5. A mulch, to maintain a constant soil cover.
6. An ample, but not excessive, supply of water.
7. Prevent competition from weeds, other garden plants, and tree roots.
8. Provide suitable fertilizers if the soil is impoverished.

From the files at the Plant Introduction Station at Glenn Dale, Maryland. Prepared by Guy Yerkes most likely during the 1940's for the United States Department of Agriculture, Agriculture Research Administration, Bureau of Plant Industry, Soils and Agricultural Engineering, Plant Industry Station, Beltsville, Maryland. Guy Yerkes was a Horticulturist with the Division of Fruit and Vegetable Crops and Diseases of the U.S. Department of Agriculture at Beltsville, Maryland. He, along with Robert Pryor, developed the Yerkes-Pryor hybrid azaleas also known as the USDA or Beltsville azaleas.

"Azalea Classics" are articles published in the past which *THE AZALEAN* staff deems worthy of being brought to the attention of today's azalea enthusiasts.

ACID PEATS AND ACID RAINS

Francis R. Gouin
College Park, Maryland

In 1962, the average pH of Canadian peat moss, as measured in College Park, was between 4.6 and 5.0. A recent evaluation of four commercial brands of peat moss being used by Maryland nurserymen and The University of Maryland revealed pH's between 2.6 and 3.1.

For the past five years, I have been involved in monitoring the pH of rains in College Park and in Huntingtown, MD. In 1980, the mean pH was 4.4, with deviations from the mean of 5.9 and 2.7. In 1985, the mean pH of the rains was 4.1, with deviations from the mean pH of 5.9 and 2.9. Over the past five years, we have been showered with an increasing number of rains with pH's below 4.0.

What does this all mean? This continued drop in pH of peat moss means that we had better be adding more limestone to our amended potting mixes and soils if we are going to maintain a proper pH balance.^a We also anticipate that the rains will have a depressing effect on the pH of agricultural soils. These changes in pH should be a warning to growers that if they are going to continue in the nursery business, they should be paying more attention to soil testing and testing the amendments they are using. Although there are some researchers who say that ornamental plants can grow at any soil pH, there is increasing evidence that there are optimum pH's at which some species of plants grow best in. Every nurseryman should be utilizing soil testing laboratories to

^aStanton Gill, Extension Agent in Montgomery County, Maryland reports in the September 24, 1986 issue of *Insect and Disease Notes* published by the Cooperative Extension Service at the University of Maryland that it requires mixing in 10 to 20 pounds of Dolomite limestone per cubic yard of peat moss to bring the pH from 2.8 up to 5.5 [Ed.].

establish pH and nutrient levels in their soils or potting medium when contemplating growing any crop. The pH of soils and potting media drastically affect the availability of nutrients to plant roots.

There is also growing evidence that the agricultural limestone being used in blending growing media for container culture may not be appropriate. This appears to be especially noticeable when the growing media are: 100% pine bark; pine bark and sand; and pine bark, peat moss, and sand. Growers using agricultural grade limestone with these media have experienced a rather sudden drop in pH within one to two months after potting. Whether these observations are due to more frequent testing and better observations by some nurseries or the combination of very acid peat, acid rains, or the use of more concentrated forms of acid fertilizers is not clear.

During the past growing season, I became involved with several growers who experienced a visible reduction in plant growth, because the pH in the growing medium and in the soil dropped. The only effective methods of correcting these situations were to make light and frequent applications of limestone over the tops of plants or by injecting calcium nitrate or hydrated lime into the irrigation system at frequent intervals. This corrective measure provides only temporary relief like 'ROLAIDS'.

The importance of soil testing to maintain optimum plant growth became very evident to me on a recent visit to Monrovia Nurseries, in Azusa, Ca. There, every batch of potting medium undergoes vigorous testing at least two to three weeks before being utilized. They operate their own testing laboratory with some highly sophisticated electronic equipment. The amount of lime and

fertilizers blended into each potting mix is computer controlled based on test results. To grow their many crops, they blend approximately nine different potting media. The results of their concentrated effort at modifying their growing media according to crop needs is very evident. The blocks of plants are very uniform in growth and color and they are able to predict the rate of growth of their many crops with considerable accuracy. Researchers at Monrovia Nurseries have also observed a drop in pH of the peat moss they use, but they have compensated for it from the very beginning.

Although there are no nurseries in Maryland that can afford such extensive and expensive testing laboratories, the benefits of soil testing are not beyond the financial means of any Maryland nurserymen. I encourage all growers to make greater use of the soil testing facilities of The University of Maryland. If your soil samples arrive air dried by Tuesday morning, the results can be ready for making recommendations by Thursday afternoon or Friday of that same week. Samples that arrive wet or without provisions for payment may be delayed from one to several weeks. It is much simpler and cheaper to correct the pH and nutrient levels of soil or potting media prior to planting than to establish cultural problems and try to correct them after the plants have been struggling to grow for a year or more. For information on soil testing, contact your County Cooperative Extension Service office. This is where a few ounces of prevention is worth many tons of cure.

There are no inexpensive soil testing kits that can provide the accuracy that a well-equipped laboratory can. Nurserymen growing plants in containers as well as in fields have a major investment worth protecting. Soil testing requires advance planning, but with good record keeping and the use of computers, there should be little difficulty in accomplishing this. Soil testing is cheap as compared to the visible and invisible losses that nurserymen suffer each year.

Soil samples can be taken before or after fields are plowed. For field growing, it is recommended that samples be taken three to six months before planting so that the necessary adjustments can be made at soil preparation time. When testing potting media, the samples should be taken one to two weeks after the major amendments such as peat moss, pine bark, or compost have been blended. This allows for equilibration of pH and nutrients between each amendment. If mixing is done during cool weather conditions, samples should be stored at room temperature at 50% moisture capacity in sealed polyethylene bags. *Never send in a freshly mixed sample and expect good recommendations.*

For those growers interested in purchasing a minimum amount of testing equipment for measuring pH, you have a choice of portable or bench top pH meters, which cost between \$250 to \$1,200 each, or pH test papers costing \$35 for several boxes. The accuracy of any testing equipment is only as good as its user. The transistorized or resistor activated pH meters have limited use, especially in container culture. Sometimes

they are more easily affected by soluble salts than by the pH of the medium they are inserted into.

For the grower who is primarily interested in monitoring the pH of peat moss, pine bark, or compost that he or she is using, pH test paper, available from biological supply houses or a chemical supply distributor, may be adequate. Most of the pH test papers with a rather narrow pH range such as 0 to 6.0, 3.5 to 6.8, 5.0 to 7.5, etc., have an accuracy of + or - 0.2 units. To use pH test papers, simply make a soupy mud of the growing medium or amendment using distilled or deionized water and allow it to stand several hours or overnight in a covered container at room temperature. Just before measuring, stir the mud thoroughly and allow the excess water to float to the surface. Insert the tip of the test strip into the muddy water and read the color change that occurs instantly. These test strips are not affected by fertilizer salts or pigments in the mud.

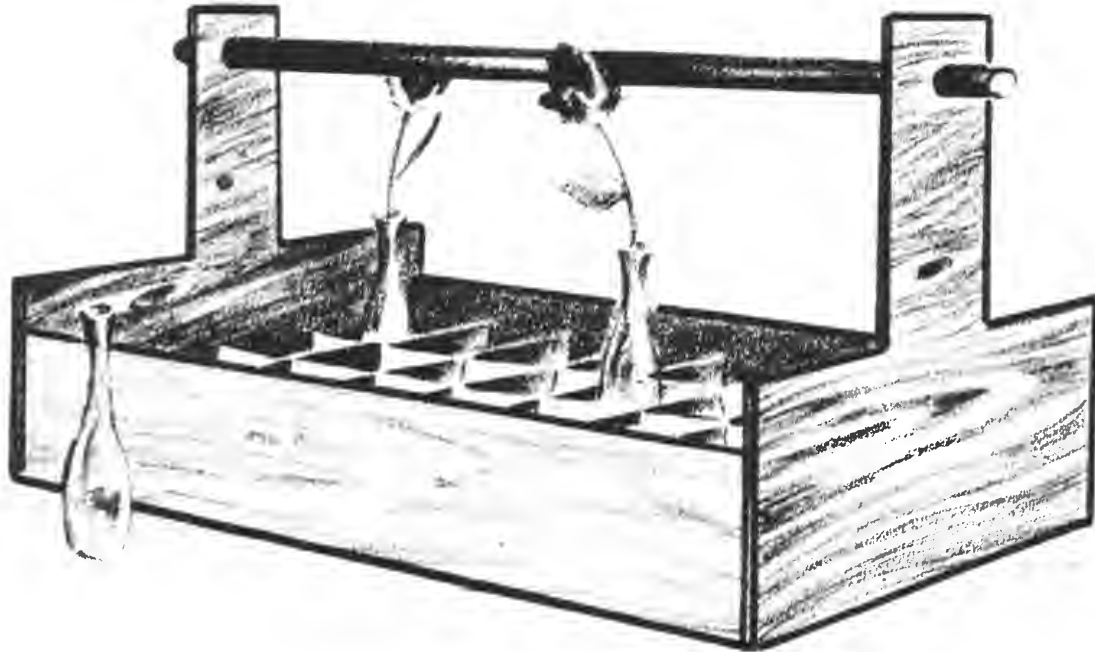
For those growers interested in purchasing portable or bench top pH meters, it is important to remember that the accuracy of a pH meter is highly dependent on its operator, the age and quality of the electrode and meter, the temperature of the electrode and the soil solution, the quality of the reference pH solutions, and the method of soil extraction. The accuracy of the pH meter has to be checked at regular intervals, sometimes two or three times daily when used constantly. Electrodes lose their accuracy with time and use. The temperature of the electrode and of the solution being tested must be the same. The instrument must be calibrated using standard pH indicators in order to maintain accuracy, and the extracting solution used to measure pH should be 0.01 M CaCl₂ (2.2g/liter or 0.3oz./gal.) in order to minimize the effects that ammonium ions have on the accuracy of pH electrodes. For the grower who intends to do an honest effort at monitoring pH's and is willing to spend the time, money, and laboratory space needed, the pH meter is a worthwhile investment that will return good dividends. But for the grower whose laboratory is the tailgate of a truck or the top of a shipping carton, then the pH test paper is adequate.

Regardless of which method of measuring pH is used, pH must become the concern of all nurserymen now and in the future. As the cost of fertilizers continues to increase, periodic complete soil testing is also profitable.

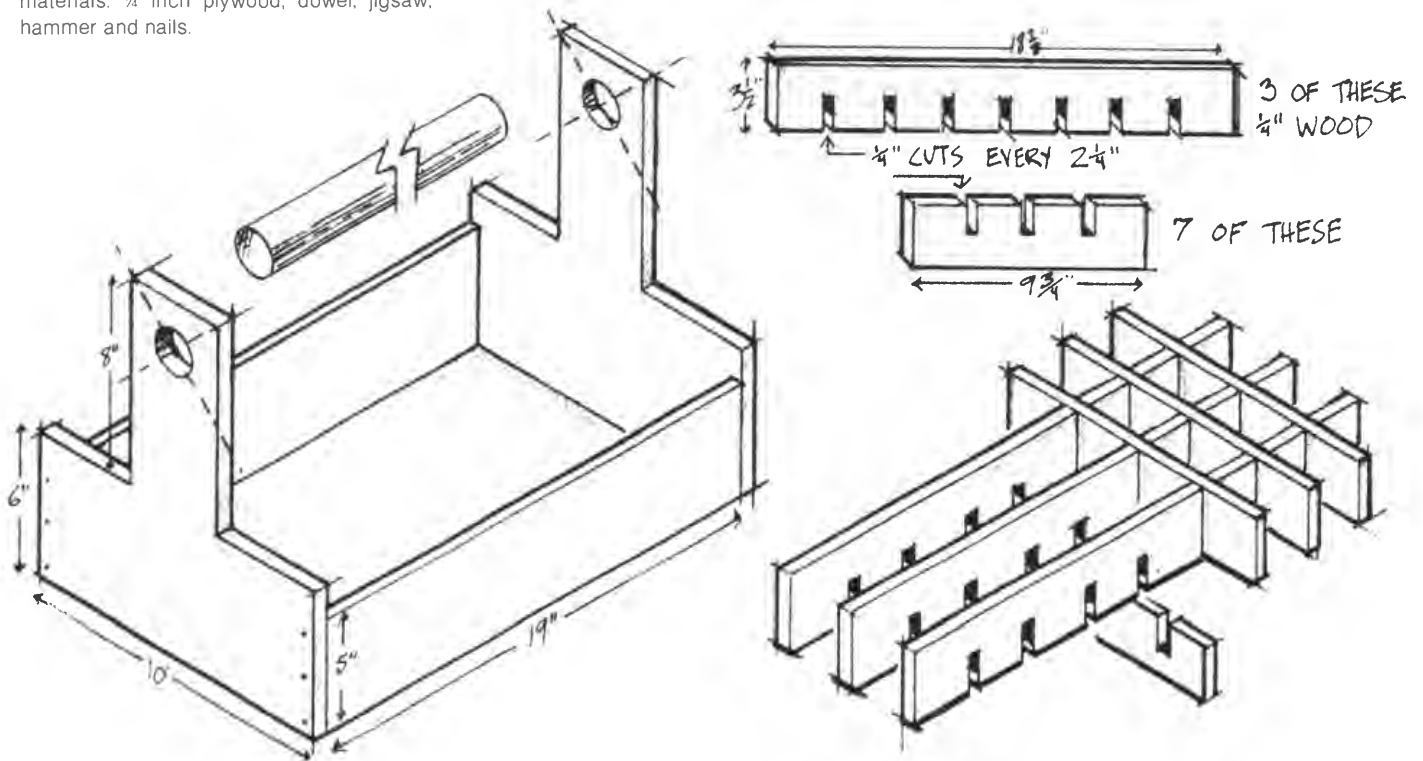
From the Department of Horticulture at the University of Maryland College Park, Maryland 20742. Reprinted from the September-October 1986 issue of *Nurserymen's News* published by the Cooperative Extension Service at the University of Maryland.

Vase Valet

Easily constructed, this handy carrier is the most convenient way to transport several bud vases at one time. Perfect for flower shows.



Follow the diagram using the following materials: 1/4 inch plywood, dowel, jigsaw, hammer and nails.



For 2 1/2 inch diameter vases such as used by the Brookside Gardens Chapter, A.S.A., in its azalea flower shows or for bottles the size of many beverage bottles change the indicated cuts from 2 1/4 inches to 3 3/8 inches. This will provide an 18 position vase valet.

Adapted from *Florists' Review Design Portfolio*, Summer 1986, p. 15. Horticultural Publishing, Chicago, IL.

SHOOT PROLIFERATION *IN VITRO* OF TWENTY ERICACEOUS PLANTS

Margaret E. Norton and Colin R. Norton

St. Andrews, Fife, United Kingdom (M.E.N.) and Vancouver, Canada (C.R.N.)

The response of Ericaceous species to cytokinins when cultured *in vitro* can be unpredictable. Synthetic cytokinins such as benzyladenine (BA) and kinetin do not stimulate shoot proliferation in some rhododendrons (3) and may be toxic to others (1,6). Isopentenyl adenine (2iP), a natural cytokinin has, therefore, been used almost exclusively when culturing Ericaceous species *in vitro* (4,5). However, shoot production using 2iP is often slow with few shoots being formed, whereas synthetic cytokinins have induced prolific shoot production in species of other families. Synthetic cytokinins, such as BA, could therefore be useful in speeding up initial shoot production in Ericaceous plants if a toxic reaction does not occur. This paper compares shoot formation in twenty Ericaceae species and cultivars.

The following were used: *Arctostaphylos media* Greene, *A. uva-ursi* (L.) K. Spreng, *Erica carnea* L. 'Springwood White', *Gaultheria hispidula* (L.) Muhlenb. ex. Bigel, *Kalmia angustifolia* L. (pink form), *Rhododendron arboreum* Sm., *R. chamae-thomsonii* (Tagg and Forr.) Cowan and Davidian, *R. X 'Chikor'*, *R. X 'Chinsayii'*, *R. dauricum* L., *R. fastigiatum* Franch., *R. forrestii* Balf. f. ex Diels, *R. keiskei* Miq., *R. leucaspis* Tagg, *R. lutescens* Franch., *R. 'P.J.M. Victor'*, *R. racemosum* Franch., *R. 'Vuyk's Rosy Red'*, *R. williamsianum* Rehd. and Wils., *Vaccinium vitis-idaea* Lodd. var. *minus*.

Shoot tips (15 mm in length) from actively growing greenhouse-grown plants were cultured on Anderson's nutrient medium (2) (pH 4.8) with Difco Bacto agar (7 g l⁻¹). BA or 2iP were incorporated in the medium at the following concentrations. BA: 0, 0.1, 0.5, 1.0, 2.5, 5.0 or 10 mg l⁻¹; 2iP - 0, 5.0, 10.0, 15.0 or 20.0 mg l⁻¹. Incubation was at 25° +/- 2°C and cool white fluorescent light was provided at 4.4 klx for a 16 hour photoperiod.

Shoot number was recorded four weeks after explants were taken from the parent plant. Optimal cytokinin concentration and maximal shoot number were derived from this data (Tables 1 and 2). A computer program was written which employed polynomial regression techniques to optimize the fit of shoot number against growth regulator concentration. An iterative technique was used to determine optimal concentration from the curve of best fit.

BA at all concentrations was toxic to *Gaultheria hispidula*, *Rhododendron 'Chinsayii'*, and *Rhododendron dauricum* and, at concentrations greater than 0.1 mg l⁻¹, caused necrosis in *Erica carnea*, *Rhododendron fastigiatum*, and *Rhododendron 'P.J.M. Victor'*. Mean shoot number (over all species) was significantly lower for BA than for 2iP treatments (p = 0.001) (BA - 2.7 shoots per explant, 2iP - 5.3 shoots). Longer incubation did not result in significantly more shoots being produced on BA media. However, *Arctostaphylos uva-ursi*

gave more shoots on medium containing BA than on medium containing 2iP.

Table 1. Maximal Shoot number in Ericaceous species after four weeks incubation on medium containing BA.

Optimal BA concentration	Maximal shoot number on BA
BA 0.5 to 1.0 mg l ⁻¹ 1)	
<i>Arctostaphylos media</i>	5.18
<i>Rhododendron 'Chikor'</i>	1.49
<i>Rhododendron williamsianum</i>	1.20
<i>Vaccinium vitis-idaea</i>	3.59
BA 1.0 to 2.5 mg l ⁻¹ 2)	
<i>Kalmia angustifolia</i>	1.53
<i>Rhododendron arboreum</i>	1.11
<i>Rhododendron forrestii</i>	0.61
<i>Rhododendron leucaspis</i>	0.90
<i>Rhododendron lutescens</i>	1.45
<i>Rhododendron 'Vuyk's rosy red'</i>	1.39
BA 2.5 to 5.0 mg l ⁻¹ 3)	
<i>Rhododendron chamae-thomsonii</i>	1.18
BA 5.0 to 10.0 mg l ⁻¹ 4)	
<i>Arctostaphylos uva-ursi</i>	16.49
<i>Rhododendron keiskei</i>	1.52
<i>Rhododendron racemosum</i>	1.00

Table 2. Maximal shoot number in 20 Ericaceous species after four weeks incubation on medium containing 2iP.

Optimal 2iP concentration	Maximal shoot number on 2iP
2iP 10. to 15.0 mg l ⁻¹ 1)	
<i>Arctostaphylos media</i>	11.78
<i>Rhododendron forrestii</i>	2.51
<i>Rhododendron racemosum</i>	2.76
<i>Rhododendron williamsianum</i>	2.06
2iP 15.0 to 20.0 mg l ⁻¹ 2)	
<i>Arctostaphylos uva-ursi</i>	6.51
<i>Erica carnea</i>	9.60
<i>Gaultheria hispidula</i>	3.62
<i>Rhododendron arboreum</i>	2.58
<i>Rhododendron chamae-thomsonii</i>	2.13
<i>Rhododendron 'Chikor'</i>	8.79
<i>Rhododendron 'Chinsayii'</i>	3.55
<i>Rhododendron dauricum</i>	4.91
<i>Rhododendron fastigiatum</i>	6.51
<i>Rhododendron leucaspis</i>	4.80
<i>Rhododendron lutescens</i>	3.23
<i>Rhododendron 'P.J.M. Victor'</i>	5.92
<i>Rhododendron 'Vuyk's rosy red'</i>	7.75
<i>Vaccinium vitis-idaea</i>	11.07

The fact that 19 of the 20 species and cultivars tested formed more shoots on 2iP than on BA-containing media strongly suggests, with the backing of the work of others, that the Ericaceae do have a common pattern of nonresponse to BA. Possible reasons for this are discussed elsewhere (7). *Arctostaphylos uva-ursi* gave more shoots on medium containing BA than on medium containing 2iP.

LITERATURE CITED

1. Anderson, W.C. 1975. Propagation of rhododendrons by tissue culture: Part I. Development of a culture medium for multiplication of shoots. *Proc. Inter. Plant Prop. Soc.* 25:129-135.
2. Anderson, W.C. 1984. A revised medium for shoot proliferation of *Rhododendron*. *Jour. Amer. Soc. Hort. Sci.* 109:343-347.
3. Fordham, I., D.P. Stimart and R.H. Zimmerman. 1982. Axillary and adventitious shoot proliferation of Exbury azaleas *in vitro*. *Hort-Science* 17:738-739.

4. Frett, J.J. and J.M. Smagula. 1983. *In vitro* shoot production of lowbush blueberry. *Canad. Jour. Plant Sci.* 63:467-472.
5. Lloyd, G.B. and B.H. McCown. 1980. Use of microculture for production and improvement of *Rhododendron* species. *Hort-Science* 15:416-417 (Abstract).
6. McCown, B.H. and G.B. Lloyd. 1983. A survey of the response of *Rhododendron* to *in vitro* culture. *Plant Cell, Tissue, Organ Cult.* 2:77-85.
7. Norton, M.E. and Norton, C.R. 1986. *In vitro* propagation of Ericaceae: a comparison of the activity of the cytokinins N⁶-benzyladenine and N⁶-isopentenyladenine in shoot proliferation. *Scient. Hort.* (in press).

From the Department of Plant Biology and Ecology, University of St. Andrews, St. Andrews, Fife, KY16 9AL, United Kingdom and the Department of Plant Science, University of British Columbia, Vancouver, British Columbia, V6T 2A2, Canada. Reprinted from *The Plant Propagator*. 32:3-5, 1986.

ASA NEWS AND VIEWS

PRESIDENT'S COLUMN

In the past two months, at least two letters from prospective members have raised the question as to "Just what does the Azalea Society offer me?"

When the Society was formed, I was a back yard gardener with about a hundred azalea plants, possibly a dozen of them with name tags. Nine years later I can count several hundred tagged varieties in the yard and greenhouse, and have shared these by the scores with other azalea lovers. True, many of my plants are hardly a year old; but that matters little. The great majority of these beauties I have acquired from other members as cuttings, and nearly all the rest came from Society-related sources as plants. Apart from plants as such, ASA has brought me a much deeper appreciation of azaleas, and has been the medium for establishing numerous friendships.

I have had the advantage of being in an active local chapter. For those who are more isolated, interchanges with other members are necessarily less frequent; but it is to be hoped that all members feel free to try. The Roster provides a basis for locating fellow members within reach. Too, contracts by correspondence usually can be arranged by at the cost of a query to the Society's Post Office box or to selected chapter representatives, citing specific interests. And those who have attended one or more of our Conventions are well aware of the interchanges, learning, and just plain fun that these foster.

The most obvious response as to what the Society offers is: *THE AZALEAN*, and well worth the cost of membership! A more complete answer is: all of the above.

Ryon Page

9TH A.S.A. CONVENTION

Dear Members,

This March issue of *THE AZALEAN*, is our last chance to conveniently make a few more comments and to pass on other bits of information of interest to those of you who are planning to attend the 1987 ASA Convention to be held in Portland-Eugene, Oregon on April 27, 28, and 29.

I am sure that most of you are wondering about the weather that can be expected during the convention. It's hard to say. Weather fronts, bringing rain and temperatures in the 45 to 60 degree range, typically travel through the Northwest every few days. Someone, with tongue in cheek, commented that we don't tan out here—we rust. We scheduled our dates for this convention to occur between the rainy spells so that we will be able to enjoy sunshine and blue skies. However, I would suggest that in the very high likelihood that we have miscalculated that you dress accordingly. Warm clothing is recommended, sweaters surely are in order, and please have available good, comfortable walking shoes suitable for moving around in gardens and nurseries under damp and uneven conditions.

Rather than going into great details regarding the total program, I will make some comments that generalize our assumptions about what you will most appreciate seeing, learning, and knowing.

During the tours, you will be visiting commercial nurseries that have obvious differences in scope and theories of methods used by each in developing their very successful operations. The two gardens that we will visit are also contrasting in the ways that azaleas, rhododendrons, and other companion plants are manipulated and used to achieve the visual impact and personal satisfaction from their garden plantings. We believe that

the tours will be the highlight of this convention. The evening programs will enhance the tours. The contents of the meetings will be brought to you by knowledgeable individuals to make the events scheduled during the evenings entertaining and informative.

In retrospect, a review of this program composed of both the tours and the evening events makes me a bit apprehensive about the rigors inherent in our schedule. In our behalf, our experience indicates that lovers of azaleas are generally rugged individuals. We will be leasing comfortable Greyhound type buses for the tours. I am sure that you will be pleased with the comfortable accommodations at the Inns that we have selected. Sleeping time may be a bit short, but the relative-early morning calls to rise and shine for the tours beginning about 8:00 AM are necessary to keep us on schedule.

A note of interest related to the ARS convention in the same Eugene location following our meeting. Local commercial growers will be setting up their displays in the mall of the adjacent Valley River Shopping Center. By Tuesday, when we begin our Eugene portion of our convention, these displays will be in place. This showing of predominately azaleas and rhododendrons will be outstanding and open for everyone to enjoy at no extra effort on our part.

So—bring your cameras and notepads. We are most anxious to meet each of you. Our ultimate intentions are to make this convention a memorable and enjoyable event for all delegates. Please come.

Sincerely,
Otto E. Henrickson,
Planning Committee Chairman,
Northwest Chapter

UPDATE ON CONVENTION SPEAKERS

On Monday evening, "In Search of the Yellow Azalea"—an open discussion to be led by Bob Badger. Tuesday evening Eleanor Stubbs will talk on "Hybridizing of the Greenwood Azaleas". Following her talk there will be a plant sale featuring Greenwood hybrids that have yet to be introduced. The Wednesday evening banquet speaker will be Britt Smith from Kent, Washington, a retired Engineer with the Boeing Corp. who will speak on research and experiments with *occidentale*. ASA members have received more information and registration materials in a separate mailing from the Society.

NOMINEES FOR SOCIETY GOVERNORS

Five Governors are to be elected at the 1987 Annual Meeting of the Society to be held in Eugene, Oregon on April 29, 1987. The nominating committee appointed by the Board of Governors presents the following names in nomination to serve a two-year term from the 1987 Annual Meeting through the 1989 Annual Meeting of the Society:

James A. (Tony) Dove, Jr., Edgewater, MD

Tony is an incumbent governor, past president of the Society, and member of the Ben Morrison Chapter. As horticulturist (University of Maryland '69) for Anne Arundel County, Tony has acquired an international reputation for his work at the London Town Public House and Gardens.

Charles H. Evans, M.D., Ph.D., Potomac, MD

An immunologist by profession, Charlie has served both the Society (charter member) and the Brookside Chapter (founding member) in many capacities. An incumbent governor, he is editor of *THE AZALEAN* and serves as chairman of the Society's finance committee.

Eleanor Stubbs, West Linn, OR

Currently the Society's vice-president, Eleanor is founder and past president of the Northwest Chapter and is active in the Portland Chapter. She headed the Home Economics and Education Departments of Clackamas Community College. A co-operator of Stubbs Shrubs, Eleanor is a member of the Propagating Study Group and is well known in the Northwest as a speaker on evergreen azaleas.

Nancy Swell, Richmond, VA

Nancy is a former vice-president and governor (1979-80) of the Society and was a founder and first president of the Richmond Chapter. An avid and discriminating collector of azaleas, Nancy also works with ferns. She is a National Council Master Flower Show Judge and is involved with the Extension Master Gardening Program and Richmond's developing botanical garden.

Glenn W. Taylor, Colonel, USMC, Ret., Springfield, VA

With experience in banking as well as military service, Glenn has been an azalea enthusiast since moving to Virginia in 1963. He has served the Society as its treasurer since 1984. A charter member and former president of the Northern Virginia Chapter, Glenn's main horticultural objective is the selection and propagation of azaleas that can be successfully acclimatized for planting in the suburban Washington DC, area.

Election of governors will be held during the business portion of the 1987 Annual Meeting of the Society. Additional nominations may be made from the membership; each such nomination must be supported by signatures from twenty or more members of the Society on a petition to be delivered to the chairman of the nominating committee on or before 20 April 1987. Such nominees will be presented, together with an indication of the sponsorship, along with the nominating committee's list of candidates for consideration and vote by the members at the Annual Meeting.

1987 Nominating Committee
Donald W. Hyatt
Barbara L. Laguardia
Dorothy Robinson
Donald H. Voss, Chairman

IN MEMORIUM

The Azalea Society of America lost one of our Founding Members with the passing of William H. (Bill) Parsons on October 8, 1986.

A long term resident of Silver Spring, Maryland and retired lawyer with the Canadian Pacific and Soo line Railroad, Bill served in many capacities at the chapter and national levels during his almost ten year association with the Azalea Society of America.

Co-author of the Society's By-Laws, instrumental in securing ASA's non-profit, tax free status and Treasurer for four years as the Society developed, Bill had a major impact on the formative years of our organization. His personal expertise was a detailed knowledge of the Glenn Dale and original Satsuki introduction hybrid azaleas, and his collection of vintage Satsuki azaleas was second to none.

Our heartfelt sympathy goes out to Bill's family and speaking for my fellow members I can safely say that he will be sorely missed by all.

William L. Clagett

THE GLENN DALE PRESERVATION PROJECT

It seems like if it is not one thing then it is another. Sudden spring freezes and uncharacteristically mild winters play havoc with our expectations and our plant material. Then, with a severe drought heaped on top of that, it is surprising that any of Germplasm Resource planting at the Glenn Dale Plant Introduction Station has survived. The fact is that some of it has not survived. The sizable collection of numbered but unnamed Back Acres hybrids is all but a faint memory. Also, to our surprise, most of the Hager hybrids that went in last year succumbed to the elements this year. Our conclusion is that they had not had time to develop an adequate root system to withstand the severe drought that we experienced.

We reported last time that we were experimenting with using Typar, a lightweight fabric mulch produced by DuPont. The Typar was installed according to the instructions and covered with a layer of mulch (a chip mulch of mixed composition made available by the station) for protection from the sun. We hoped the Typar would put a dent in the significant weed problem in the Germplasm Resource beds. The theory was great, but little did we know that we were taking on what must certainly be classified as "hard core, industrial grade" weeds. We discovered to our shock and dismay that the weed seed had germinated in the layer of mulch above the Typar and proceeded to send down roots through the Typar thus significantly complicating weed removal. When we pulled up the weeds, the Typar wanted to come up too. It is a funny picture, but it was not funny at the time. Based on our experience, we believe that we are going to have to seek a chemical solution to the weed problem.

The Committee is very pleased to acknowledge the donation of almost a complete collection of Robin Hill hybrids to the Germplasm Resource Planting Area by Don Voss of Vienna, Virginia, a member of the Northern Virginia chapter. The donation is particularly satisfying since Don is the son-in-law of Robert Gartrell and a recognized expert on the Robin Hill hybrids. The criteria for donating plants to the Glenn Dale project were previously published in *THE AZALEAN* 5:54 (1983).

A spring workday was instituted for the first time this past year. It was not very successful due to an unforeseen schedule conflict which served to keep the turnout modest. But recognizing that there is value in affording people an opportunity to experience and enjoy the beauty that is Glenn Dale in the spring, a spring workday will be held in 1987. Rounding out the year, we will continue with our customary three fall workdays. The workdays will all be Saturdays and the specific dates are April 11th, September 19th, October 17th, and November 21st. The hours will be from 9:00 a.m. to 1:00 p.m. or until you "run out of gas." Bring gloves, loppers, shears, pitchforks, shovels, saws, axes, and enthusiasm. The work is not difficult, and the fellowship is superb.

For directions or for more information, contact Roger Brown at (301) 577-7509 or Andy Dietz at (301) 384-2092.

William C. Miller III
for The Glenn Dale Preservation
Project

1987 AZALEAN COVER ARTIST

The drawing on the cover of this issue of *THE AZALEAN* is by Donald C. Hand, supervisor of Horticulture at the National Gallery of Art of the Smithsonian Institution in Washington, D.C. and a member of the Brookside Gardens Chapter. Donald also contributed the drawing that appeared on the 1986 cover and we congratulate him upon the selection of another of his drawings for the 1987 cover.

BACK ISSUES OF THE AZALEAN

Back issues for all 8 volumes of *THE AZALEAN* remain available. Volume 1 (1979) has 2 issues, Volume 2 (1980) 5 issues and the remaining volumes each have 4 issues. The price including postage effective January 1, 1987 for each of the 15 issues comprising Volumes 1 through 4 is \$2.50 for each issue. The price for back issues from Volumes 5 through 8 and continuing is \$3.50 for each issue.

CHAPTER NEWS

The Frederic P. Lee Commendation in recognition of outstanding contributions furthering the knowledge and appreciation of azaleas was presented to Debby Emory at the annual meeting of the Brookside Gardens Chapter on December 8, 1986. Debby is a charter member of the Azalea Society of America and the Brookside Gardens Chapter. She has a splendid azalea and companion plant garden and has contributed articles to the Society's collection of leaflets on azalea selection and care and to *THE AZALEAN*. Debby is the fifth recipient of the award which the Brookside Gardens Chapter previously has presented to Ryon Page, Anna Jane Martin, Charlie Evans and Buck Clagget.



Debby Emory, recipient of the Frederic P. Lee Commendation with Warren Groomes, Vice-President of the Brookside Gardens Chapter and chairman of the chapter's award committee.

MCCRILLIS GARDENS

Discover the beauty of McCrillis Gardens on Saturday, May 2, 1987, as it begins a month of special programs to highlight the azaleas for which the Gardens are justly famous. Administered by Brookside Gardens, a part of the Maryland-National Capital Park and Planning Commission, McCrillis covers five acres of wooded Bethesda property with more than 750 varieties of azaleas, including choice native species and representing all of the major hybrid groups, from the evergreen Glenn Dales and Kurumes to the deciduous Knap Hills and Ghents.

On this Saturday, members of the Azalea Society of America will be present, 10 a.m.-4 p.m., to answer azalea questions. Free literature will also be available. At 10 a.m., a Brookside Gardens staff member will lead a guided tour of the gardens, exploring the amazing collection of azaleas, rhododendrons, and unusual Asian specimen trees to be found at McCrillis. At 2 p.m. Barry Yinger of the U.S. National Arboretum, well-known for his plant collecting trips to Japan, will talk about the fine plants native to the Orient which make hardy, beautiful additions to Washington, D.C. area gardens. He will comment especially on the Satsuki group of azaleas. Mr. Yinger has brought from Japan more than 300 varieties formerly unknown in the United States. These plants are presently on trial at McCrillis Gardens, under evaluation jointly by the Azalea Society of America and Brookside Gardens. Excellent varieties have been given to the nursery trade for production and dispersal to the public.

Since our festivities coincide this Saturday with the Landon School Azalea Festival where the Brookside Gardens Chapter will also have its annual azalea flower show, M-NCPPC will supply a shuttle bus between McCrillis Gardens and Landon School. The shuttle will run 10 a.m. - 4 p.m., leaving the driveway at McCrillis every half hour and leaving Landon from the Lower School Field at Torrey Hall every 15 minutes before and after the hour. There will be no charge for the shuttle service. The shuttle seats 10 but is not handicapped accessible.

McCrillis Gardens is located at 6910 Greentree Road, Bethesda, Maryland, and may be visited daily from 10 a.m. to sunset. There is no charge for entrance. Parking is available directly across the street at Woods Academy after 4 p.m. on weekdays and at any time on weekends. No parking is allowed at McCrillis. For more information about McCrillis Gardens, please call Brookside Gardens at 949-8231 between 9 a.m. and 5 p.m., Monday through Friday. All programs are free and open to the public.

LETTER TO THE EDITOR

The Duncan article, "Azalea Petites," (*THE AZALEAN*, December 1986, Pg. 66) contains a couple of statements about Robin Hills that need some clarification. Most serious is the notion that Robin Hills are "ground-cover" azaleas. This points to a basic problem in description of plant size and habit—regional and environmental differences. I feel sure that in Connecticut, Duncan's experience showed Robin Hills in the size range she described. This is probably a tad smaller than in Wyckoff. But in this area and farther south, given clones tend to grow somewhat higher. The original 'Betty Anne Voss', for example, in Robert's bed in Wyckoff was no higher than 18" after 10 or 11 years. My plant, in Vienna and in a more shaded location, is now 28" high. Even one of the broadest, 'Tamino' (syn.: V1-8), tends to grow somewhat higher here than in New Jersey. I think that several others in the area who grow Robin Hills would agree that "ground cover" is not an apt term for this region.

I think it unfortunate that Duncan stated Robert introduced more than 200 Robin Hill azaleas. As I mention to everyone within range, Robert requested that only the 69 plants he named as Robin Hill azaleas be called by that name; the others should be referred to as Gartrell Hybrids. Early in his work with azaleas, he determined that he would try to hold down the number of his introductions. I suspect the 69 in the end exceeded his goal. The numbered Gartrell Hybrids were distributed to friends for testing or for landscape use—they definitely were not meant to be "introductions." But people liked them, and more propagation than testing ensued!

Don Voss
Vienna, Virginia

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