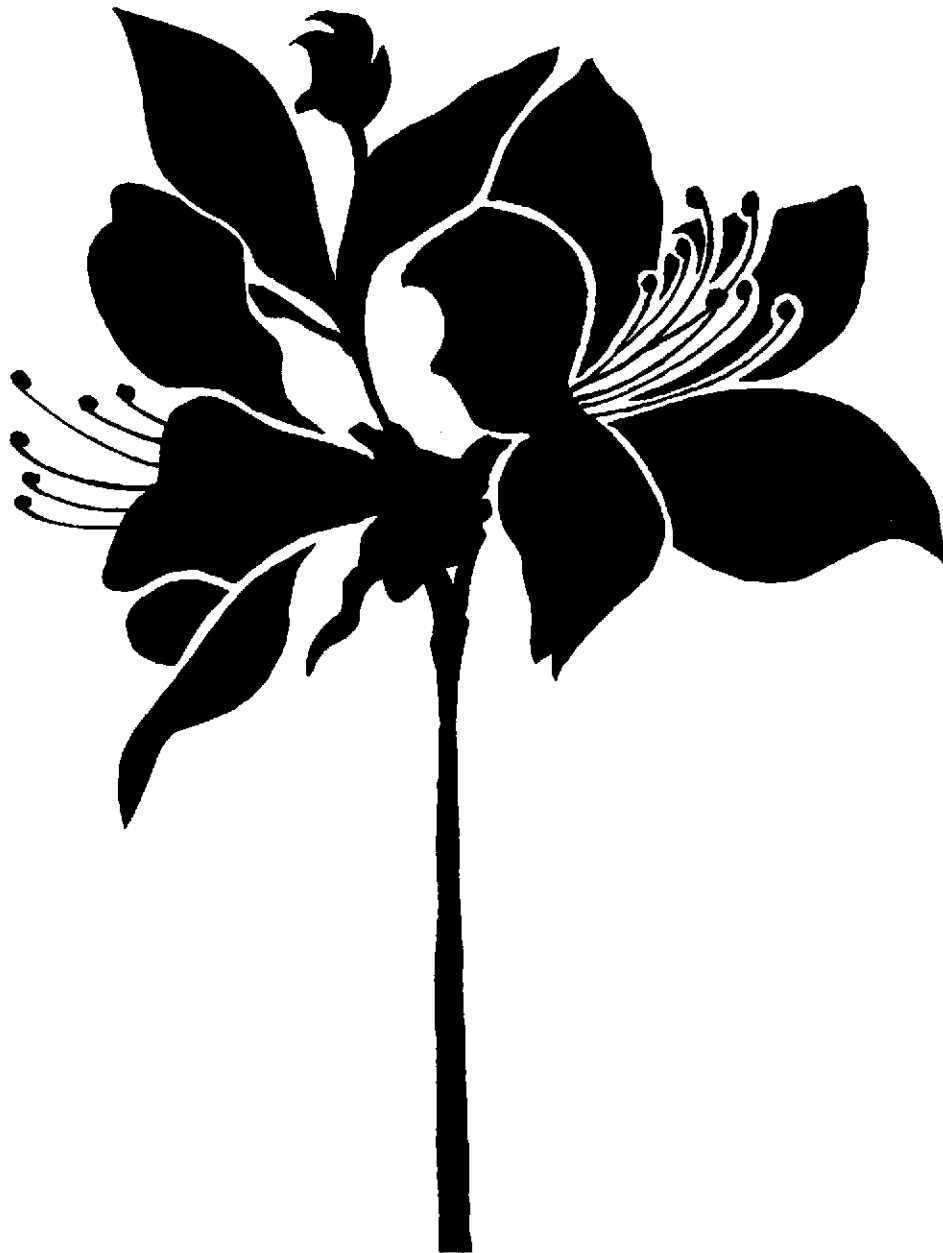

THE AZALEAN

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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

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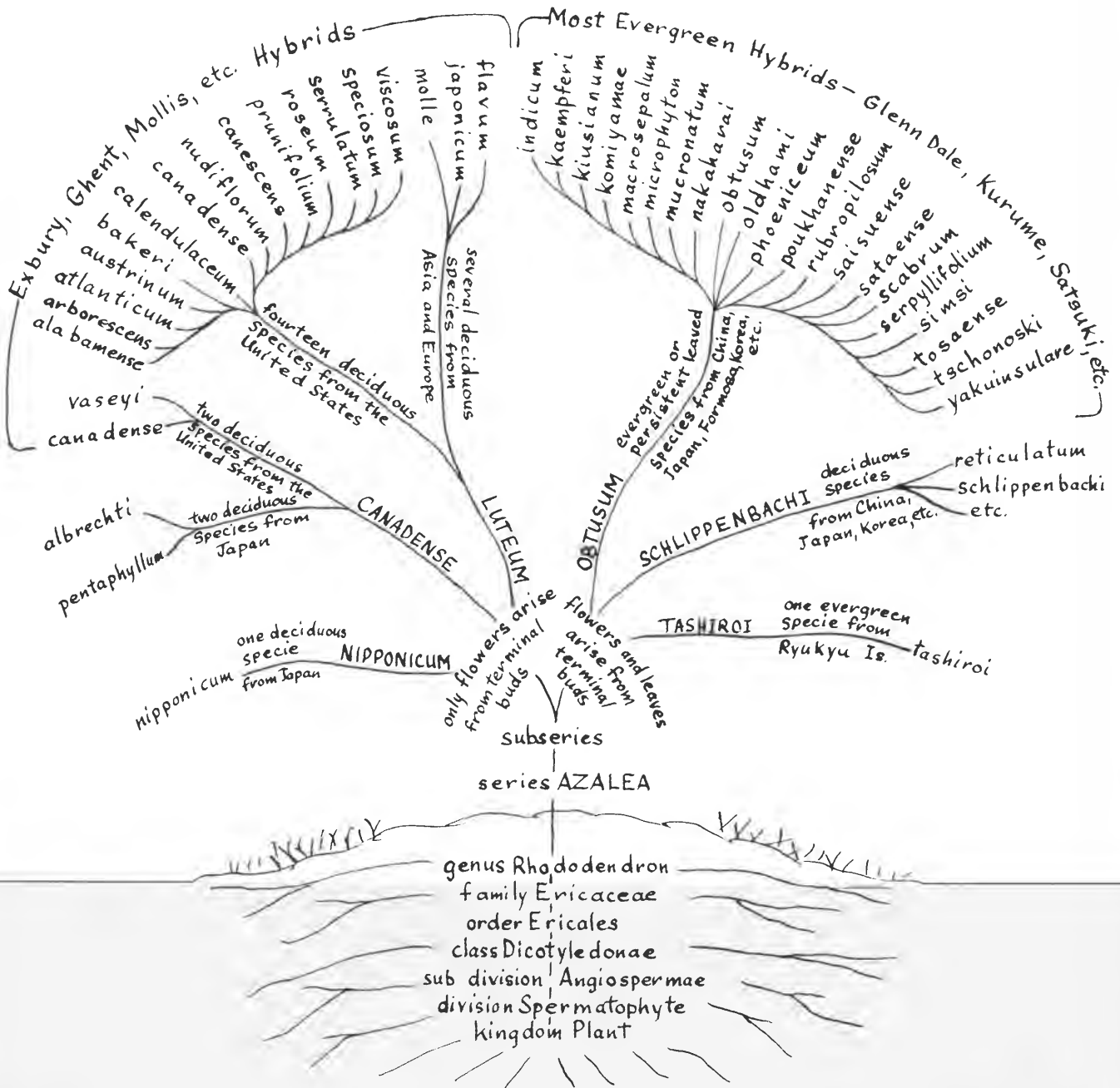
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THE AZALEA FAMILY TREE



Evans 84

This azalea family tree is based upon the Hutchison classification of azaleas and upon the listing of varieties in **THE AZALEA BOOK** by Frederic P. Lee, 2nd Edition, D. Van Nostrand Company, Inc., Princeton, N.J. (1965). The drawing is by Nancy E. Evans who is the Art Director for **THE AZALEAN** and a member of the Brookside Gardens chapter.

THE NAMES OF ROBIN HILL AZALEAS: SIDELIGHTS ON A FAMILY HISTORY

Donald H. Voss
Vienna, Virginia

Fashions in the naming of children shift as the sands of time. The popularity of "Mary" in one generation may yield to that of "Deborah" in another. But in any generation, some names are unique—indeed, odd—enough to make one reflect on the children's antecedents. This is the chronicle of the names given to members of the "family" of Robin Hill azaleas, with some sidelights on their origin and their originator, Robert Derby Gartrell.

Although many of the Robin Hill names reflect some aspect of the character of the plants' human "parent," only one ('Whitehead') provides a direct clue to the careful and thorough scientific work that went into the creation of this remarkable group of azaleas. Alfred North Whitehead was a man of science, a mathematician and philosopher much admired by Bob Gartrell, himself a scientist. From his training as a chemist and from long experience in industrial product development, Bob Gartrell was steeped in scientific method. When his interest in horticulture led him to concentrate on the hybridization of azaleas, it was natural for him to start by identifying a gap in the spectrum of ornamental-landscaping qualities available in plants already on the market, decide what sort of plants would best fill the gap, and undertake systematic research directed toward their production.

Living in northern New Jersey, where cold-hardiness presents a challenge to the grower of many of the larger-flowered, more attractive azalea cultivars, Bob Gartrell in the late 1930's recognized the need for a group of cold-hardy azaleas with larger flowers, improved flower form and better foliage, and an extended blooming season. While an admiring public was content to bestow its accolades on the early-blooming Kurumes as they marked the arrival of spring, Bob Gartrell determined to develop later blooming, hardy, evergreen azaleas for his area and to enhance their textural merit as landscape plants by selecting for excellence of foliage and growth habit, as well as for desired attributes of form and texture in the flowers. He frequently stresses the dual nature of the goal, remarking that while a plant may bloom for a week or so in the spring, its foliage is the dominant characteristic in the landscape for the remaining fifty weeks of the year. As he prepared for hybridizing by studying many hundred species and named hybrids, Bob Gartrell refined his preferences and goals. Compactness, low-growing habit, relatively open-faced flowers with broad petals of good substance, attractive foliage, and cold-hardiness ranked high among his selection criteria.

The goal was defined—but, how to achieve it? Of the crosses that produced the twenty-nine currently registered Robin Hill azaleas, eighteen were made in 1960.¹ This concentration in time might have resulted from a sudden plunge into hybridizing, followed by some lucky results. But nothing could be farther from the truth. Two decades of research, planning, hybridizing, and evaluation of results preceded the crosses of 1960.

BREEDING THE ROBIN HILLS

Knowing that Ben Morrison of the U.S. Department of Agriculture had produced over four hundred named azaleas of great beauty in the Glenn Dale series, Bob Gartrell decided to tabulate and analyze the parentage of selected Glenn Dales in order to identify parent strains that held the promise of passing to their offspring the qualities he was seeking to combine. He similarly studied the characteristics and relationships of species azaleas described in the classic Wilson-Rehder monograph. Hundreds of the available species and cultivars were grown for observation, and contemporary hybridizers were contacted for information and advice.

Parent stock was assembled from many sources, including the USDA Plant Introduction Station at Glenn Dale, Maryland; Tingle's Nursery at Pittsville, Maryland; and Henry Hohman's Kingsville Nursery near Baltimore, Maryland. Some plants appeared unbidden. One plant used in the hybridizing program carries the name "Minton" in Bob Gartrell's notes: this was a Belgian-hybrid florists' azalea given to the Gartrells by a Ridgewood, New Jersey, neighbor named Minton.

Bob Gartrell's plant explorations in quest of new parent strains often had interesting aspects, even though they did **not** involve travel to exotic places such as the Japanese islands. Another parent plant from the florist trade is designated as "BA" in many of the Robin Hill notebook entries. The initials stand for Bobbink and Atkins of Rutherford, New Jersey, long a leading commercial grower of rhododendron and azaleas. Having struck up an acquaintance with their propagator and been told to "stop by anytime," Bob Gartrell did just that. One winter's day he came upon a pile of clippings outside a greenhouse where florists' azaleas were being trimmed. Though apparently frozen stiff, the cuttings had a certain allure, and several were soon ensconced in the Gartrell cutting bed. One of the survivors had desirable characteristics and was used in hybridizing—"BA."

¹See Plant Registry, *Quar. Bull. Amer. Rhod. Soc.* 31:118-123 (1977); 32: 46-50 (1978); *Amer. Rhod. Soc. Quar. J.* 37:112-114, 231-238 (1983).

Henry Hohman and Lehman Tingle were informative, interested, and helpful in providing hard-to-find stock, including certain of the Satsukis. One anecdote illustrates Mr. Tingle's interest in fine ornamentals and his generosity toward those attempting to come up with new and better cultivars. Bob Gartrell was at Pittsville, searching through several beds where Mr. Tingle recalled having a few plants of 'Malvatica,' one of the parents of the Kaempferi hybrids. Having located a few of the desired plants, Bob Gartrell called across the beds to Lehman Tingle and asked if he could obtain two of them. The characteristically generous reply was: "You can have anything I have, except my wife."

From the carefully selected group of species, hardy and not-so-hardy cultivars, and florists' azaleas having characteristics that fit Bob Gartrell's profiles, hundreds of crosses were made. By 1959, nearly 2,000 promising plants were blooming at Robin Hill. At this point, the reader may wonder about the origin of the name "Robin Hill." Bob Gartrell relates that the name is drawn from an episode in Galsworthy's **Forsyte Saga**. In the mid-1920's, he told the story to his young daughter, Jeanne. The narrative involved a house on a hill that was named "Robin Hill." Bob Gartrell remarked to Jeanne that if they ever had a house on a hill, they would call it Robin Hill. A decade later, when the Gartrells moved into a house on a hill in Ridgewood, New Jersey, Jeanne recalled the exchange, and the family's new home became Robin Hill. Years later, after Bob Gartrell retired, he carried on his hybridizing at "Little Robin Hill," in Wyckoff, New Jersey.²

Lehman Tingle was deeply interested in the potential of the plants grown at Robin Hill in the 1950's. He sent a trailer-truck to Ridgewood to move the new hybrids to Pittsville, where they would be grown in a large test field next to a field of Glenn Dales. Bob Gartrell travelled to Tingle's Nursery in Pittsville in May 1962 to re-evaluate his plants. Their foliage had come through the rigors of an especially hard winter in noticeably better condition than that of the Glenn Dales nearby. But despite the beauty of their foliage and the glorious contrasts of hue, brilliance, and subtlety of form in many of the large flowers, Bob Gartrell's scientific training led him to weigh their merits objectively against his selection criteria, taking into consideration the many fine plants then already available in the nursery trade. His conclusion: the plants in the field at Tingle's Nursery were of excellent quality, probably superior in hardiness to the Glenn Dale cultivars in the adjoining field—but not sufficiently distinctive to warrant introduction. Keeping several plants for further evaluation and for use in the hybridization program, Bob Gartrell told Mr. Tingle to scrap the rest.

This was a hard decision, but not a rash one. By then, the intrepid hybridizer knew that his greenhouse and

seedling beds held the promise of a group of distinguished plants worthy of the goals he had set. These included most of the cultivars we know today as Robin Hill azaleas. Bob Gartrell had integrated the results of his hybridizing experience in the 1950's with further research on the crosses made by Morrison, Gable, and others, and he had sought out additional parent stock from the Satsuki azaleas brought from Japan by Dr. Creech for the U.S. Department of Agriculture. Having painstakingly selected combinations of seed and pollen parents, Bob Gartrell was confident that superior results would be forthcoming from his new series of crosses. When one subsequently visited Little Robin Hill during the long blooming season of the Robin Hill azaleas, it was clearly evident that his confidence had not been misplaced. The years of research, analysis, planning, crossing, growing, evaluating, and selecting resulted in plants that admirably fill the gap in the azalea spectrum that he identified some forty years ago.³

WHAT'S IN A NAME?

Having made this significant contribution to horticulture, the proud parent should have been able to rest on his laurels. Now, however, he faced the inexorable need to name his selections in order to facilitate their distribution. In examining the names given to Robin Hill azaleas, we leave the calculating scientist and come to know another side of Bob Gartrell—a man of wide-ranging interests and a lively sense of humor. An ardent classical-music buff, he found that many favorite musical names had already been used (for example, 'Palestrina' and 'Mozart'). To commemorate bright and lively operatic themes, he has named and registered one plant as 'La Belle Helene' and sought to register another as "Rosenkavalier." The latter name had already been registered. The opera's hero is named "Octavian"—but there is an 'Octavia.' The familiar nickname of Octavian is "Quintin." Naturally, there is a 'Can-Can.' So another favorite opera was selected, and Robin Hill V1-8 is now registered under the name 'Tamino,' hero of Mozart's **Magic Flute**. Another of Bob Gartrell's interests, history, was passed over as being likely to yield names far too ponderous for the cheery new hybrids (the reader need only reflect on the impression that might be created by a name like "Oliver Cromwell").

The strictures relating to use of previously recognized names and the specific registration rules governing cultivar names clearly presented Bob Gartrell with a challenge completely different from that encountered in devising hybridizing strategies. Indeed, he feels naming to be more difficult in a sense than hybridizing. A glance at the accompanying tabulation of Robin Hill names

²The variant rendering of Robin Hill as one word (Robinhill) in 'Nancy of Robinhill' is an accommodation to the nomenclatural rule that limits names for registered cultivars to three words.

³Bob Gartrell requests that only the 69 cultivars which he selected and named be called Robin Hill azaleas; his other cultivars, many of which he distributed under number for testing and evaluation, should be known as Gartrell Hybrids.

reveals several major themes—some obvious (family, friends, appearance of plant), some touched by dry humor, and others almost random (see table).

in recognition of her tireless assistance to Bob Gartrell in distributing plants for study and in the preparation of many of the Robin Hill registrations.

NAME ASSOCIATIONS AMONG THE ROBIN HILL AZALEAS¹

FAMILY

*Nancy of Robinhill (046-3) [1960]
 *Jeanne Weeks (U7-8) [1960]
 *Betty Anne Voss (U17-8) [1960]
 Maria Derby (H19-9)
 Scott Gartrell (N31-1)
 Sara Holden (T22-5)
 Eliza Scott (T23-4)

FRIENDS

*Dorothy Hayden (T5-2) [1960]
 *Mrs. Emil Hager (U14-5) [1960]
 *Dorothy Rees (V1-9) [1960]²
 Mme. Mab Chalon (T16-7)
 Hilda Niblett (T17-5)
 Betty Layman (T22-7)
 Pat Erb (T36-3)
 George Harding (T38-5)
 Olga Niblett (T50-5)*
 Peg Huger (U1-8)
 Maxine West (U8-10)

PLACE NAMES

*Papineau (R8-5) [1967]
 *Sherbrook (X55-9) [1967]
 Corry (T21-9)
 Antoine (U17-3A)
 [Oakland (parent plant)]

ANGELA THIRKELL NOVELS

*Robin Hill Gillie (T13-6) [1960]
 *Sir Robert (T15-8) [1967]
 *Gwenda (T37-4) [1960]
 *Laura Morland (U4-1) [1960]
 *Eunice Updike (U22-2) [1960]²
 *Glencora (V5-1) [1960]
 *Glamora (V21-1) [1960]
 Mrs. Villars (T23-10)
 Robin Dale (T24-8)
 Verena (T49-4)
 Pucken (T62-6)
 Peter Pooker (U15-1)
 [Effie Bunce (syn. of Conversation Piece)]

APPEARANCE OF PLANT

*Early Beni (N26-6) [1958]
 *Robin Hill Frosty (N31-9) [1956]
 *Bob White (N42-6) [1968]
 *White Moon (T17-7) [1960]
 *Redmond (T21-1) [1960]
 *Conversation Piece (T36-6) [1959]
 *Tan Dilly (U2-9) [1967]
 Congo (E2-2)
 White Hart (J12-1)
 Turk's Cap (T60-6)
 Wee Willie (V2-10)
 Red Tip (W20-10)
 Blue Tip (Z12-2)

PARENTAGE OF PLANT

*Lady Louise (J44-7) [1957]

MUSIC

*Tamino (V1-8) [1967]
 *La Belle Helene (V2-3) [1961]

MEN OF SCIENCE

Whitehead (T2-4)
 Gresham (T18-3)

FLIGHT OF FANCY

*Spink (K34-3) [1960]
 *Greta (T13-8) [1960]
 *Lady Robin (T14-10) [1960]
 *Watchet (T28-10) [1960]
 Nigel (N33-2)
 Eric (P5-2)
 Talbot (T16-10)
 Roddy (T18-1)
 Elsa (T20-7)
 Christie (T21-2)
 Wendy (T21-3)
 Welmet (T24-5)
 Ormsby (T45-3)
 Palmyra (T49-3)
 Chanson (U17-3)
 Rosanne (V1-7)
 Richie (V3-6)

NAMES WITHDRAWN BY RDG

[Achievement (V1-2)]
 [Monique (now Dorothy Rees, q.v.)]

* = Registered cultivar.

¹ R. D. Gartrell has requested that only the 69 cultivars which he selected and named (those in this list not in []) be called Robin Hill azaleas; his other cultivars should be known as Gartrell Hybrids.

² "Updike" is misspelled "Upkike" in the Plant Registry.

³ Mrs. Rees's name is misspelled "Reese" in the Plant Registry.

⁴ The named cultivar is that propagated by Beasley/Transplant Nursery.

Compiled by D. H. Voss
 November 1983

Bob Gartrell considers his 046-3 to be the finest of the Robin Hills, and this plant bears the name of his wife, Nancy. Two more fine plants are named for his daughters ('Jeanne Weeks' and 'Betty Anne Voss'). To interject a personal note, I am very partial to the latter plant—for sound horticultural as well as sentimental reasons (the foliage is as outstanding as the flowers). Others in the family circle commemorate Bob Gartrell's mother ('Maria Derby'), a brother ('Scott Gartrell'), and grandmothers ('Sara Holden') and ('Eliza Scott').

Among the friends whose names grace Robin Hill azaleas are both family friends of long standing and more recent acquaintances stemming from the bond of interest in fine azaleas. Notable among the later group, of course, is Betty Hager. 'Mrs. Emil Hager' was named

Another name closely associated with—but not a part of—the Robin Hill series is 'Oakland,' Bob Gartrell's name of convenience for a putative Kaempferi hybrid of unknown pedigree. The plant was purchased as a landscape plant from a roadside stand in Oakland, New Jersey, in the early 1930's. Parenthetically, Bob Gartrell sticks to his evaluation of 'Oakland' as being a Kaempferi hybrid just as tenaciously as he refuses to divulge the name of a "well-known azalea expert" who insists that the plant is not a Kaempferi hybrid. In any event, 'Oakland' is cold hardy, having survived several winters with temperatures as low as -25° to -30°F. In seeking genes to impart cold hardiness, Bob Gartrell remembered this old warhorse, and it played an important role in the development of many of the cultivars in the Robin Hill series.

Other place names enter the story. Originally from Atlanta, Georgia, the Gartrells themselves acquired cold hardiness by living in Montreal and elsewhere in Canada during the 1920's. From long-remembered street names in Montreal came 'Papineau,' 'Sherbrook,' and 'Antoine.' 'Corry' is named for the town north of Oil City, Pennsylvania, where Bob Gartrell's maternal grandfather first settled upon coming to this country.

'Lady Louise' bears part of the name of its distinguished seed parent, 'Louise Gable.' An early-blooming Robin Hill resembling in appearance 'Beni-kirishima' is aptly named 'Early Beni.' Names including "red," "white," and "blue" not surprisingly relate to flower color. 'Robin Hill Frosty' is a beautiful light pink that seems overlaid with a faint breath of frost, more pronounced along the margins. One plant, with reddish-pink petals that appear tan at their tips, took the fancy of a visitor to Little Robin Hill; she supplied the name 'Tan Dilly' by commenting: "Oh, look at the tan cast of the petals; that flower is a dilly!" Another plant's tendency to have recurving petals in some seasons called to mind the Turk's Cap lily and gave rise to 'Turk's Cap.'

Some of the descriptive names that were chosen involve a touch of irony and demonstrate the pitfalls in selecting plant names. On the basis of its early performance, one plant was named 'Achievement,' but Bob Gartrell now feels on the basis of further evaluation that the plant does not merit inclusion in the Robin Hill series and has withdrawn the name.⁴ A different sort of misnomer arose in the case of 'Wee Willie.' The plant is appropriately named with respect to foliage and growth habit; but, as the plant matured, the flower size increased and now approaches three inches in diameter—hardly "wee."

Bob Gartrell's sense of humor and his affection for the traditions of English country life shine through the selection of names suggested by Angela Thirkell's novels. Identification of these characters to those who have not

read Thirkell's whimsical narratives cannot convey the full impact of associations evoked by the names. But a few examples may suggest the flavor. "Sir Robert" is **not**, as many have supposed, named for Bob Gartrell; rather, Sir Robert is Thirkell's dignified civil servant, usually far from home settling disputes in the far corners of the world. 'Laura Morland' seems to capture the flighty charm of the ingenuous widow who wrote cheap detective stories and was well liked. Not all of the characters were from the upper crust of society, however. 'Pucken' was from the wrong side of Barchester. And "Effie Bunce"—who had great difficulty remembering the fathers of her several children—at first seemed an apt name for the plant later registered as 'Conversation Piece.' This cultivar shows its Satsuki genes (from 'Eikan') by bearing flowers in a profusion of diverse markings—flecked, striped, sectored, and self.

A final group of names, labeled "Flight of Fancy," has but one unifying theme—the pursuit of names not previously used. Some may involve associations, but most were plucked from thin air.

POSTLUDE

The full sweep and dynamics of thirty years of work in developing a series of fine hybrids cannot be adequately captured in a few pages. It is hoped that this chronicle of the work and works of Bob Gartrell may impart some sense of the nexus between fine hybrid plants and the character and work of their creators. When next the reader has the opportunity to view and study the rich foliage and entrancing flowers of fine hybrids, perhaps the plants' names will lead to reflection on the dedicated effort and creative imagination of the hybridizer.

Donald H. Voss is the son-in-law of Robert D. Gartrell and is a member of the Northern Virginia chapter.

⁴Bob Gartrell judged plants by their performance in northern New Jersey. Growers in less rigorous climates may find merit in Gartrell hybrids that were not selected for inclusion in the Robin Hill hybrids.

“Azalea Classic”

A PERSONAL EXPERIENCE IN BREEDING AZALEAS

Robert D. Gartrell
Wyckoff, New Jersey

My early experience in plant breeding began in Canada where I lived in the 1920's. At that time I worked with delphiniums which did very well in the Canadian climate. When I returned to the States—Northern New Jersey—I found that delphiniums were satisfactory only when grown as biennials. Another handicap was that once a superior clone had been obtained, it could not be propagated by practical methods—cuttings. The experiment was therefore abandoned.

As I was still interested in breeding, a change of material was indicated. After several years of observation, the field was narrowed down to rhododendrons and azaleas. The latter was chosen, as azaleas give a wonderful show of bloom in the spring, and the foliage during the rest of the growing season is attractive. The growth habit is generally neat, seldom “leggy” as is the case with many rhododendron in this area. Azaleas have a long life and are easily propagated. Where large numbers of seedlings are to be grown, as is necessary in breeding experiments, they require less ground space than rhododendrons.

Next I considered two approaches as to the source of material to be used. One can work with species or one can choose to work with existing hybrids, capitalizing on other breeders' work. There are advantages in using species. There, blood lines are well established and the laws of genetics are more applicable. Hybrids have mixed parentage. In many, if not most cases, the parents are unknown, thus crosses among hybrids can produce highly unpredictable results.

Looking back, it can be seen that Joe Gable worked mostly with species while Ben Morrison used hybrids in developing the Glenn Dale series. Both were quite successful.

In the 1940's when I started working with azaleas, the number of species available was limited. Even at that time there were many hybrids, the Kurume, Kaempferi, Gable, Indian, etc. The first of the Glenn Dales were being introduced, and there were a few called Chugai hybrids—these are now classed as Satsuki.

I elected to work principally with hybrids of the ever-green class. In the beginning, I acquired nearly all of the available clones, growing them on, selecting the ones which appealed to me as possible parents. All told, I studied some 600 named varieties. After a few years of this, I started to make crosses. I did not work with any definite plan, merely attempting to combine the better properties of the two parents. Many excellent plants resulted, but the percentage of mediocre plants was very high. Twenty-five years later, after making some

1000 crosses and raising about 25,000 seedlings, I am beginning to learn which hybrids make good parents. Through observation and experience, the percentage of superior, hardy plants has been improved. Careful records have been kept of the results of each cross.

There are certain clones with dominant characteristics that can be expected to show in a good percentage of their offspring. For instance, Gable's 'Louise' is dominant, and appears to some degree in most of its seedlings.

The clone 'Glacier', a Glenn Dale hybrid, is interesting. Morrison stated that it came from a cross of 'Malvatica' and 'Yozakura', two quite dissimilar plants. 'Glacier' does not resemble either parent, nor is it similar to any of its sisters. I have made this cross several times, but never obtained anything approaching 'Glacier.' It was one of those fortunate breaks. What makes 'Glacier' desirable is its beautiful foliage together with large white flowers and good growth habit. It is not too hardy in this area. The good foliage and plant form seems to be dominant and is carried over in many of the seedlings resulting from crosses with other clones.

A very valuable plant for breeding is one I call 'Oakland' for my own identification. It was obtained from a wayside stand in the early 1930's. It has withstood 30°F below zero on one occasion without damage. It is undoubtedly a Kaempferi hybrid of unknown origin. It is similar to the Kaempferi hybrid 'Mary' in appearance. The flowers are single and rose pink. What makes it valuable as a parent is that it imparts hardiness to seedlings when crossed with many different clones. It is quite versatile, taking on many of the characteristics of the other parent. It has fathered plants with white as well as a wide range of colored flowers, double or single, depending on the other parent. Some of the hybrids from 'Oakland' show some evidence of Kaempferi foliage while others take on the foliage of the other parent, including that of 'Glacier' and the Japanese Satsuki.

One of my early hybrids—'Louise Gable' x 'Tamagiku'—has been valuable in producing some degree of doubling with very good foliage and plant habit.

In recent years, I have been working with the Japanese Satsuki azaleas. These are most desirable from every standpoint as a garden plant except for one weakness—they are not reliably hardy in the Northeast. It is true that some will not like the fact that some flowers may be striped or splashed with contrasting color or that one plant may carry blooms of different colors occasionally as do some of the Glenn Dales.

The flowers of the Satsuki series are generally single, large—up to 3¾ inches—and of good substance. They are usually flat-faced, not trumpet-shaped, with broad petals—often with six petals instead of the usual five. The colors are mostly white or pastel shades tending to salmon pink or orange red. Only a few have the purplish red of 'Hinodegiri.' Some are strongly margined, white with a colored margin, but sometimes the coloring is reversed. All are mid to late season blooming.

The leaves are dark and glossy. In the earlier introductions, they were narrow and pointed, but later introductions are broad and rounded, much like 'Glacier.' In the South and on the Pacific Coast, they should be fully evergreen as are those I carry through the winter in a shaded cold frame. In the open here they approach being evergreen. Many of the earlier introductions are very low growing. 'Gumpo' is typical. Later ones are low to medium height. They are nearly all dense.

I do not know who decided which plants should be classed as Satsuki. Lacking anything better, I follow the listing of Lee in his **Azalea Book**. There is admittedly much confusion in names and descriptions. 'Gumpo' was brought early, but nobody at the time thought of calling it a Satsuki. Later appeared a collection of azaleas called Chugai hybrids. These are now listed as Satsuki. We are indebted to the U.S. Department of Agriculture for introducing most of the Satsukis. The last collection brought in by Dr. Creech I believe to be the finest. Lee lists 168 names. I have, at various times, tried 47 of these and 37 sold to me as Satsuki but not included in those shown by Lee. Not being hardy here, many have been lost. Had I learned earlier that nearly all winter nicely in a shaded cold frame, I would be richer in Satsukis.

Practically all of my hybrids of recent years include one Satsuki parent. The object was to add hardiness without losing the virtues of the tender plant. The Satsukis used in the crosses with best results were 'Getsutoku,' 'Heiwa,' 'Amaghasa,' 'Eikan,' 'Shinnyo no Tsuki,' and 'Tamagiku.' Two of the better ones used to improve hardiness without changing the Satsuki characteristics are 'Oakland' and 'Louise Gable.' this last may cause some degree of doubling.

As an example, a cross was made in 1962 of 'Oakland' with pollen from 'Heiwa.' Seeds were germinated on milled sphagnum moss in the green house and the following winter grown in the greenhouse bench. They were then transferred to nursery beds in the open—given no protection or mulching. The lowest temperature during the period was -10°F. Of the 41 plants set out, 37 had survived with little or no winter damage by 1969. This year, I have selected 14 of this lot as being superior for growing on. They are all dense, low to medium in height, with foliage like the Satsuki with one exception. The flowers are large (3-3½ inches in size), with broad petals, flat-faced. Colors range from white to shades of rose and salmon pink. Most have ruffled edges, although neither parent was ruffled. In only one case do they resemble the parent 'Oakland.'

Recently, after many years I have selected some 200 plants for growing on to determine which should be propagated and named. I expect to select another 50 plants next season. I find the matter of selection to be the most difficult part of the whole operation. I have the same problem that Ben Morrison had in selecting and naming the Glenn Dales. I suspect that he stopped because he ran out of names rather than plants. I hope to use great restraint in naming those to be commercialized. This will be quite a task as they are all so beautiful.

If and when any of these plants are available, they will be known as Robin Hill Azaleas.

Robert D. Gartrell is retired and resides in Black Mountain, N.C. This article originally appeared in the **Quar. Bull. Amer. Rhod. Soc.** 24: 237-239 (1970).

"**Azalea Classics**" are articles published in the past which **THE AZALEAN** staff deems worthy of being brought to the attention of today's azaleas enthusiasts. Whenever possible "**Azalea Classics**" will relate to a feature article in **THE AZALEAN** in order to increase the perspective of the issue. We think this is a valuable way to link the past, present, and future in azalea horticulture.

BREEDING AZALEAS FOR EVERGREEN LEAVES AND YELLOW FLOWERS

Robert L. Pryor
Beltsville, Maryland

Background: In March 1933, I went to work on the Selman farm, which is now the north farm of the Agricultural Research Center of the United States Department of Agriculture in Beltsville, Maryland. I worked as a laborer, digging drainage ditches, etc. In September, I left there to work at the Green Springs Dairy in Baltimore, which was just beginning. I worked there until May 1936, when I went back to what used to be known as the Plant Industry Station, which was in the process of being moved from Arlington Farm, Virginia to Beltsville, Maryland. About 1937, I was put on Civil Service as a geneticist. My first assignment was breeding **Verbena**; later assignments were in tulips and columbine (**Aquilegia**). This was terminated when it was decided to send the seed of these long-spurred Columbine to Cheyenne, Wyoming (where they were eventually lost). Then came the phlox-breeding program that resulted in the introduction of a new line of **Phlox** named Beltsville Beauty Phlox. Then for a few years I was working as a cytologist for Dr. Emsweller, as well as caring for the outside plantings and the azalea breeding program.

Guy E. Yerkes began the USDA Azalea Breeding Program in the spring of 1939. The first seed was planted December 6, 1940, transplanted April 1941, and repotted in 4-inch pots June 1941. These were seedlings of a Mollis x Ghent, Rose Kaempferi, and **vaseyi**, a good light pink. Yerkes' first crosses were recorded in 1941. The original purpose was to produce azaleas with better flowers and leaves that were hardy at Beltsville and further north. This was one of the reasons for using the above-named plants. Florists saw some of these plants with good flowers and good foliage and asked us to try forcing them and to let them try some, so they were included in the program along with the nurserymen. Yerkes' last record was a note to propagate and distribute to cooperators a list of 23 cultivars. Yerkes retired in 1946 for reasons of health and died three years later. I had been helping Yerkes and was assigned the Azalea Breeding Program.

Soon after I began the breeding of azaleas, I had the desire to produce a yellow evergreen azalea. I began crossing evergreen plants with deciduous yellow azaleas. Many of the evergreen reds seemed to have a background yellow in the flowers, however, the hybrids just produced a more vivid red, because the red always masked the yellow. Therefore, I decided to use only white evergreen seedlings for the female parents, as white would not mask the yellow if it were transferred. I also became interested in small plants that were sometimes found in these populations, and instead of planting them out (probably to be lost) I kept them inside the

greenhouse. From these small plants came the Beltsville genetic dwarf race of azaleas. At present there are 20 cultivars of the dwarfs and 47 of the larger type in the trade. In 1958, the breeding program was curtailed, and I was not allowed to breed for anything but the evergreen yellow. So only one introduction has been made since 1960.

The production of a yellow evergreen azalea took many years of crossing and the growing of many thousands of plants to flowering size for observation. In the year 1970 alone, 10,000 seedlings were disposed of. This was one of the largest crops of seed but gives some idea of the number of plants that have been grown to accomplish the goal.

In crossing evergreen with deciduous azaleas, many difficulties were encountered. Generally speaking, the cross will go only one way. The evergreen used as a female will set seed using deciduous pollen. However, when using the deciduous as the female and the evergreen as the male, generally no seed is set. When seed is secured, germination is very poor. Many times when seed germinate there are many albino seedlings, and these die. Some seed germinate and grow for a time but have club-like roots and never mature; others just die. There is also a lack of fertility in many of these seedlings so that many crosses are made that do not set any seed.

Light and bottom heat are necessary for best germination. The bottom heat should be about 10 degrees fahrenheit above the bench air temperature. Seed should be sown on fine, firmly-packed media, so that the seed will not be covered too deeply by heavy watering. Media should be kept moist but not soaked. In the 1975-76 season, someone turned the heat off, and 4,808 seeds had zero germination. After the heat was restored, 7,990 seeds were planted and 1,066 germinated.

This demonstrates that bottom heat is beneficial. The percentage of germination for each lot of seed would not mean anything due to the variation in the number of seed per cross. Over-watering or under-watering caused many seedlings to die due to **Phytophthora** in potted plants and damping-off in seed flats. Keeping plants constantly wet by mist or other means can cause bacterial disease to get started, and thus more plants are lost.

The following list identified deciduous azalea cultivars and species used in the effort to attain a yellow evergreen azalea:

'Adriaan Koster'	'Hotspur'
'Ann Callingham'	'Hugh Wormald'
'Anthony Koster'	'Klondyke'
<i>atlanticum</i>	'Koster's Brilliant Red'
<i>austrinum</i>	'Lapwing'

<i>bakeri</i>	<i>luteum</i>
'Brightstraw'	'Marion Merriman'
'Buzzard'	<i>molle</i>
<i>calendulaceum</i>	Mollis + Mollis hybrids
'Christopher Wren'	'Narcissiflora'
'Comte de Quincy'	'Nicholaas Betts'
'Directeur Moerlands'	<i>nudiflorum</i>
'Dr. F. R. Durham'	<i>obtusum</i> f. <i>japonicum</i> - yellow
"Franks #1"	<i>occidentale</i>
'George Reynolds'	<i>prunifolium</i>
'Gibraltar'	'Rocket'
'Golden Horn'	<i>speciosum</i>
'Golden Oriole'	'Toucan'
"H.T.S. 811"	'Unique'
'Hortulanus H. Witte'	

Yellow broadleaf evergreen rhododendrons used were:

'Broughtonii Aureum'	<i>keiskei</i>
'Butterfly'	'Letty Edwards'
'Carita'	<i>lutescens</i>
'Crest'	<i>macgregoriae</i>
'Evening Glow'	'Moonstone'
'Goldbug'	'Mrs. Betty Robertson'
'Golden Glow'	'Odee Wright'
'Gold Mohur'	'Unique'
'Harvest Moon'	<i>wardii</i>
'Honeymoon'	<i>zoelleri</i>
'Hotel'	'Zuiderzee'
'Jacksonii'	

Results of three years crossing are:

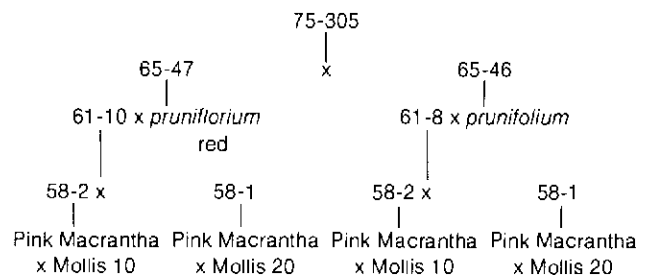
	1974	1975	1976
Female plants	88	249	231
Flowers pollinated	1,815	1,535	1,956
Seed pods set	537	311	358
Seed	20,104	13,828	11,236
Seed germinated	6,254	707	1,475
Average seed/pod	37.43	44.46	31.39
Flowers pollinated/pod set	3.38	5.1	5.46

The number of seed set in pods varied from zero to 344. Generally, the low seed set was from the evergreen x deciduous crosses and the larger number of seed came from sib crosses. In the 1974-75 season, 13,828 seed were sown and only 707 germinated. If this were a straight evergreen azalea cross, each pod would have contained from 300 to 500 seed. Taking an average of 400 seed per pod, there could have been a possible 214,800 seed (537 x 400) in 1974. With a 90 percent germination, this would produce 193,320 seedlings. However, from these difficult crosses, I got only 707 plants. This shows some of the pitfalls of breeding for a yellow evergreen azalea.

Using a magnifier, the seed was cleaned, observed, and counted. Some crosses gave very small seed that looked plump, others gave both small and normal size. However, the germination did not follow seed size. Small seed gave the same germination as the normal-size seeds. Some crosses produced plants that had both

types of leaves, others all evergreen leaves, others all deciduous leaves. There was no set ratio due to the different parents. Some plants were normal size, others dwarf and all sizes in between. The crosses with the broadleaved rhododendrons x deciduous azaleas produced plants with a leaf intermediate between the two parents.

Flowers were red, pink, purple, white, cream, some cream with yellow standards, some yellow buds that faded to white when open, some greenish yellow. There were a few that produced a light yellow that held their color. After trying all the combinations I could think of and ones that other people suggested, it was only God's providence that I have the best yellow plant. It is a dwarf and had not bloomed when my plants were moved to the National Arboretum. It was planted with larger plants and neglected for a few years. I saw it one day and thought it would make a good bonsai, but when it bloomed it was a good yellow. From the work undertaken to produce a yellow evergreen azalea, two varieties will be introduced to the trade as soon as enough plants are available. One (75-315) is a normal size plant that has hose-in-hose red flowers with no blue in them. The other (75-305) is a dwarf novelty with twisted leaves and good yellow flowers. It will set seed and could be used in a breeding program. The following is the pedigree of this yellow-flowered plant.



I should mention an observation which I have had since retiring. One plant had good yellow flowers in 1980. When the soil was tested, it had a pH of 4.5. The next year, the same plant at the same location had lighter colored flowers. When the soil was tested, the pH was 6+. This same thing was observed in the broadleaved rhododendrons in the greenhouse at the National Arboretum. The color of plants brought in from the oak woods was much darker than that of plants of the same varieties kept in the greenhouse. However, no pH tests were made on these plants, so it remained a mystery. The Washington, D.C. water supply tests run about pH 7.5, according to reports, so it would not take long to change the soil pH from 4.5 to 6 or above and thus create a potential for color change.

Robert L. Pryor is a retired horticulturist. He delivered this presentation to members of the Brookside Gardens chapter at their annual meeting, December 6, 1983. Those interested in reading further about the "Beltsville Dwarf" azaleas and efforts to produce a yellow evergreen azalea may wish to consult:

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ORIGINS OF THE EVERGREEN HYBRIDS 'BEN MORRISON' AND 'B.Y. MORRISON'

Dr. Charles H. Evans
Potomac, Maryland

Two evergreen azaleas, 'Ben Morrison', and 'B.Y.M.' or 'B. Y. Morrison,' were first distributed during the 1960's. The two cultivars are distinct from one another in every respect, save in their named tribute to Benjamin Yeo Morrison. Neither azalea was named nor was introduced by Morrison, and the two azaleas differ in flower color, bloom time, and growth habit. Still, perhaps due in part to their somewhat unusual methods of naming, introduction, and distribution, they have at times been mistakenly referred to as being the same. The purpose of this article is to document our present knowledge regarding the origin and characteristics of the only two evergreen azaleas named for America's most prolific azalea hybridizer.

'Ben Morrison'

'Ben Morrison' is a variegated, single azalea with a boldly-striped, blood-red pattern suffused upon a very pale rose to white background center with an irregular white margin. The cultivar was introduced by the United States Department of Agriculture (USDA) on June 26, 1968, the introduction coinciding with the introduction of another evergreen azalea, 'Mrs. LBJ,' on the occasion of the first B. Y. Morrison Memorial Lecture sponsored by the USDA Agricultural Research Service (1). 'Ben Morrison' was named by Dr. John L. Creech of the Agricultural Research Service Crops Research Division who subsequently became Director of the U.S. National Arboretum, and who has written the following concerning the origin of 'Ben Morrison': "This azalea came out of the Glenn Dale series. It was a seedling that was not named but Morrison liked it so we always called it 'BYM Special' and kept the plant in the greenhouse at Glenn Dale for a number of years. I always liked it because it reminded me of small *Lilium speciosum* flowers. After Morrison's death and about the time the B. Y. Morrison lecture series was initiated I decided it would be most appropriate to name this azalea 'Ben Morrison'" (2).

The parentage of the cultivar is unknown. Some have suggested that it may be a sister seedling to the Glenn Dale hybrid 'Surprise' due to the similarity of 'Ben Morrison' with that variety (2,3). 'Surprise' and twenty other

named Glenn Dale hybrids have ('*Vittata Fortunei*' x '*Louise*') x '*Adzuma-no-hana*' as their parents (4). Six of the hybrids ('*Cinnabar*,' '*Defiance*,' '*Frivolty*,' '*Helen Fox*,' '*Presto*,' and '*Surprise*') have a few characteristics that are similar. Only 'Ben Morrison,' '*Helen Fox*,' and '*Surprise*,' however, possess the distinctive colored center and irregular white border (3). A recent review of the files at the USDA Plant Introduction Station located in Glenn Dale, Maryland, by Bill Miller, President of the Brookside Gardens chapter, discloses that the Glenn Dale hybrid '*Luna*' (P.I. 201896), prior to being named was labelled as "B.Y.M.'s Special" as late as 1952 (5). A listing entitled "Cuttings Taken of Azalea Selections by B.Y.M. 1947" also records Bell number 39484 from the cross of mac. Deep Salmon [*indicum* (Ed.)] x Hazel Dawson, as "Special" which subsequently was named Carnival (P.I. 163097) (6). "B.Y.M.'s Special" and "Special", however, are to be distinguished from "BYM Special", the label on 'Ben Morrison', and no additional clues as to the parentage of 'Ben Morrison' have been discovered to date in the Glenn Dale files.

'Ben Morrison' has been widely distributed and is commercially available at present from a number of growers. The USDA Plant Introduction number assigned to this azalea on October 2, 1968 is 337618, and the official USDA description of 'Ben Morrison' is: "Azalea to 3-feet high; dense twiggy; leaves medium green, dull, semi-evergreen; flowers single to 3 inches across in clusters [of 2-3], ground color Empire Rose with showy blotch of Tyrian Rose, petal margins irregularly white. Mid to late May. Hardy at Glenn Dale, Md." (7). Growers in the metropolitan Washington, D.C. area have observed that mature plants of 'Ben Morrison' have an upright growth habit, bear 1 inch wide x 2 inch long elliptical leaves, and can reach five feet in height.

'B. Y. Morrison'

'B. Y. Morrison' is a solid, orangish dull-red single azalea that blooms about the same time or a week or so later than 'Ben Morrison' in the Washington, D.C. area. This cultivar was privately distributed by Henry J. Hohman of Kingsville, Maryland, as 'B.Y.M.' commencing prior to July 1961, subsequently has also been referred

to as 'B. Y. Morrison', has never been officially introduced, is not commercially propagated, and is of unknown parentage. It is presumed that Hohman named the cultivar (3) but the origin of 'B. Y. Morrison' remains a mystery. 'B. Y. Morrison' may be an unnamed Glenn Dale hybrid given to Hohman by Ben Morrison, or it may be a Hohman seedling of unknown parentage.

George Harding writes that he obtained his "first cuttings of 'B.Y.M.' from Bill McCrillis on 7/25/61. He [Bill McCrillis] got it from H. Hohman before that date under the name 'B.Y.M.'. Roy Magruder never heard of it until a few months before the USDA decided to release their clone. I believe they were going to call it [their clone] 'B.Y.M.' but changed to 'Ben Morrison' after Roy reported seeing it in my yard" (6). Reid Denis obtained a plant of 'B.Y.M.' from Henry Hohman in the early sixties. Others may have also received specimens but it is unknown how extensively the cultivar was distributed by Hohman. Whatever the origin, 'B. Y. Morrison' apparently was in Hohman's possession during the 1950's and interestingly although first distributed by Hohman neither 'B.Y.M.' nor 'B. Y. Morrison' was ever listed in Hohman's catalogs.

The characteristics of 'B. Y. Morrison' are also somewhat uncertain, as few individuals have grown the cultivar and some of their experiences are dissimilar. George Harding reports, "I have 3 plants in my garden [in Germantown, Maryland] which are 22 years old - 3 feet tall by 5 feet spread. One is planted in the sun and 2 are in the shade. They had some late mid-season bloom this year - orange red - 2½ inches - 3 inches diameter. I'm lucky if I have noticeable bloom one year in five. The plant is quite hardy but very bud tender. Summer leaves are large 2¼ inches long by 1 inch wide, and winter leaves are smaller and darker green" (8). In the author's yard, 'B. Y. Morrison' is a profuse bloomer each year. It is also very hardy and very semi-evergreen in the sense that 'B. Y. Morrison' routinely bears a very large number of summer leaves which are shed each fall. Specimens planted in Silver Spring, Maryland, have bloomed well in the sun with some color fading, and a specimen planted at the McCrillis Garden in Bethesda, Maryland in 1978 has been found to be tolerant to semi-shade and to

bloom well (9). Whether the differences reflect a variability in this azalea clone or are due to a small sampling in diverse local environments remains to be established.

A summation of the presently known characteristics of 'B. Y. Morrison' is: Azalea to 3-5 feet high spreading to 5 feet with upright growth; dense, bushy; leaves moderately deep green, shiny, semi-evergreen, with large summer leaves (2¼ inch long by 1 inch wide) and smaller and darker green winter elliptical leaves; flowers single to 3 inches across, orangish dull-red similar to Royal Horticultural Society Colour Chart 'Vermillion #18' with darker red blotch. Late May to early June and hardy in the Washington, D.C. area.

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Charles H. Evans, M.D., Ph.D., is the Editor of **THE AZALEAN** and a member of the Brookside Gardens Chapter.

A NEW METHOD FOR PROPAGATING WOODY PLANTS FROM TISSUE CULTURE

Dr. Martin M. Meyer Jr.
Urbana, Illinois

Producing large quantities of clonal material of certain woody plants by tissue culture is now possible. Although the list of temperate zone woody plants that can be propagated this way is small compared to herbaceous and tropical foliage plants, it is growing rapidly.

However, some plant propagators question the economic feasibility of tissue culture. With some plants, conventional cutting propagation would be the system of choice. But in other instances, tissue culture propagation is economically competitive and may be the only method that works well.

AN EXAMPLE

Tissue culture can be used to produce large quantities of propagules of several *Rhododendron catawbiense* clones. This plant, with its large leaves, takes considerable space in a conventional mist bed system. One of the clones tested proved impossible to propagate by conventional cuttings.

The *R. catawbiense* propagule produced by tissue culture is somewhat different from those of conventional propagation systems. The propagule must be grown rapidly. It may even surpass the growth of a conventional cutting if raised properly.

Conventional tissue culture propagation of rhododendrons requires that the shoot tips proliferate many side shoots from axillary buds after a period of rejuvenation. This is usually done on a medium developed by Anderson for rhododendrons (2). This technique of rhododendron shoot tip proliferation was further developed by Anderson (1) in cooperation with Kyte and Briggs (4) to yield commercial quantities of propagated material.

The major problem with this technique is sterilizing the shoot tips. Sometimes more than 100 shoot tips can be vigorously sterilized with a yield of only a few viable explants. I worked with shoot tips of *R. catawbiense* clones produced locally for a few years before I decided that I was not going to obtain clean cultures from the limited plants available to me in central Illinois.

Because I had success with the flowers of herbaceous perennials, I decided to try working the rhododendron flower parts. They were very easily disinfested and capable of plant regeneration. These studies yielded a propagation method of *R. catawbiense* from florets (6).

THE PROCEDURE

Complete flower buds (containing the florets) of several *R. catawbiense* clones were collected several times during the dormant season. They were brought into the laboratory and washed thoroughly. The buds were peeled until the florets were visible through the thin inner bud scales. These whole buds were immersed in a

10 percent Clorox solution for 20 minutes and rinsed several times with sterile water.

The florets were removed from the buds in a sterile hood. Individual florets were placed in test tubes on Anderson's medium (2) containing either one or four milligrams indoleacetic acid (IAA) per liter and 4 or 15 milligrams 6 (r, r-dimethylallylamino)-purine (2iP) per liter. The florets were placed in the dark for two weeks and then put under cool white fluorescent light for 18 hours a day at 26°C (80°F).

After three to four months, large granular masses of green tissue were evident on the pedicels and ovary bases of the florets. These masses were transferred to Anderson's medium and treated with 0.1 milligrams IAA and 0.5 milligrams 2iP per liter. They produced large quantities of small shoots.

These shoots were further proliferated or transferred in groups to Anderson's medium with one milligram IAA and one gram activated charcoal per liter (Fig. 1). These



Fig. 1. *Rhododendron catawbiense* 'Sefton' plants grown under fluorescent light while in the juvenile phase before transplanting into containers.

shoots hardened slightly, and a few formed roots. They were then transferred to a medium consisting of a part sand, a part perlite, a part silty loam, and two parts peat.

They were put in a high-humidity environment, where they finished rooting and began growing. A small "Bag greenhouse" worked well for this purpose (Fig. 2).



Fig. 2. Young rhododendrons finish rooting and begin growing in the high-humidity environment of this "bag greenhouse" fashioned from a gallon plastic food storage bag.

The *R. catawbiense* clones 'Album', 'Roseum Elegans', 'Nova Zembla' and 'Sefton' have been propagated by this method. 'Sefton' had earlier proved impossible to propagate by cuttings or shoot tip tissue culture with the materials available to me.

SEEDLINGS

Tissue culture produces small shoots of clonal material that could be compared to small cuttings. However, because rejuvenation and obvious changes in plant morphology appear to occur with small juvenile-type foliage (Figs. 1 and 2), I feel the resulting materials are more appropriately compared to seedlings.

Seedlings may not be subject to as many growth restrictions as cuttings. Several accelerated growth production schemes for seedlings provide the plants with supplemental light, high levels of fertility, and regular watering.

The supplemental light has two purposes: (1) photosynthesis can be increased and (2) the day length can be extended for controlling growth.

The influence of photoperiod on woody plant growth is covered in detail by Nitsch (7). This work designated four classes of plants based on the effects of long days and short days on stem growth.

- Class A—Long days prevent the onset of dormancy and allow continuous growth, while short days cause dormancy. An example is weigela.

- Class B—Long days prevent the onset of dormancy and allow periodic growth, while short days cause dormancy. An example is oak.

- Class C—Long days prevent dormancy, but short days do not cause it. An example is juniper.

- Class D—Long days do not prevent dormancy. An example is lilac.

PHOTOPERIOD EXPERIMENTS

Many of the temperate zone woody plants Nitsch (7) lists fall into Classes A or B. I have worked with some seedlings of *Rhamnus Frangula* (Class A) that have shown this response (Fig. 3).



Fig. 3. *Rhamnus Frangula* seedlings grown under varying day lengths. The plants (left to right) were produced under 9, 12 and 15 hours of light per day.

Seedlings of this plant were grown in a greenhouse under varying day lengths with incandescent light. The plants grew very little under 9-hour days, slowly under 12-hour days and continuously under 15-hour days.

When they were placed in a growing bed in late May, the plants that received 9 and 12 hours of light per day immediately started growing and grew rapidly because of the increased natural day length.

Plants that received 15 hours of light per day continued to grow rapidly and were considerably larger at the end of the season. All treatments went dormant at the same time, and there were no apparent differences in hardiness.

A similar system was developed by Pinney and Peotter (8) for commercial production of birch seedlings. McCown and Amos (5) used an accelerated growth system on birch clones produced by tissue culture. Although both groups obviously must have used supplemental photoperiods on these Class A plants, they failed to mention the details.

Nitsch (7) had several questions about Class B plants. This is probably due to the fact that Class B plants show Class A growth when in the seedling stage. Even plants like Douglas fir, spruce, and pine, which have strong periodic growth patterns, can be made to grow continuously while they are seedlings (3, 9). This explains how accelerated production techniques have yielded large quantities of conifers on the West Coast and in other areas.

SIGNIFICANCE FOR RHODODENDRONS

Because there is rejuvenation of juvenile or seedling-type morphology in *Rhododendron catawbiense* propagated by tissue culture, one should be able to force these small plants like seedlings. And indeed, they did grow continuously after they were transplanted to containers and kept under 18 hours of light per day with regular fertilizing and watering.

Extra care must be taken with these plants to minimize stress. Young plants that experienced even short periods of moisture stress often formed terminal buds and started the periodic or flushing growth patterns of Class B plants (Fig. 4).

I have observed a similar phenomenon with some Douglas fir and Scotch pine seedlings. The time between growth flushes varies, depending on the species, but it may be three to four months with some of the conifers. Rhododendrons may only take a month or two.



Fig. 4. *Rhododendron catawbiense* 'Setton' plants produced from tissue culture after forming terminal buds. The one on the left was stressed by drying several weeks earlier than the one on the right.

Thus great care must be taken to maximize the growth of woody plants propagated by tissue culture. They are comparable to small seedlings and are likely to grow continuously and rapidly for long periods if protected against stress.

These woody plants should grow continuously if exposed to 15 to 18 hours of light per day. They should be watered carefully and receive regular applications of liquid fertilizer. Because tissue culture yields small propagules, this form of propagation can compete

favorably with conventional methods only if plant growth is maximized.

Woody plants produced by tissue culture can be programmed to such an extent that they can be forced while small in a greenhouse in winter and early spring. Rapidly growing plants can be put outdoors in containers or the field after the danger of frost is past. However, the plants still should not be allowed to become stressed.

The day length should be favorable in late spring and early summer for continued rapid growth. The plants can then enter dormancy with the onset of shorter days and droughts and other stresses of late summer and early fall.

Research is under way at the University of Illinois, Urbana, to develop the maximum growth potential of tissue cultured plants while young to provide good, strong liners for growing on in the nursery.

(This research was supported by grants from the Illinois Agricultural Experiment Station and the Horticultural Research Institute—ED.)

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Martin M. Meyer, Jr., Ph.D. is in the Department of Horticulture, University of Illinois, Urbana. This article originally appeared in the **American Nurseryman**, 157:65-70 (1983).

ASA NEWS AND VIEWS

SIXTH ASA NATIONAL CONVENTION

The Azalea Society of America will hold its annual convention on May 11-13, 1984 in Fredericksburg, Virginia. The Richmond Virginia chapter is hosting the convention which is being held jointly with the spring meeting of the Mid-Atlantic chapter of the American Rhododendron Society. Weekend activities will include a flower show, garden tours, a plant sale, and speakers. Polly Hill, developer of the North Tisbury azaleas will be one featured speaker, along with Rosalie Nachman talking about "Shady Gardens" and a lecture by Barry Yinger, horticulturist and Curator of the Asian Collection at the U.S. National Arboretum. The annual business meeting will include election of five individuals to the Board of Governors, adoption of amendments to the By-laws and opportunities for chapters to bid to host future ASA conventions.

PROPOSED AMENDMENT TO ASA BY—LAWS

The Board of Governors of the Azalea Society of America endorses the following proposed amendment to the By-Laws of the Azalea Society of America, Inc.

ARTICLE VII OFFICERS, Section 3. Election, Appointment, and Terms of Office - Sentence 2 presently reads: "Subsequently, elected officers shall serve for a term of approximately one year (from annual meeting to annual meeting), and no elected officer may serve more than four successive terms, or a maximum of approximately four years, in any one office." The amendment being proposed will delete ", and no elected officer may serve more than four successive terms, or a maximum of approximately four years, in any one office".

Adoption of the amendment will permit the Board of Governors to re-elect an officer, e.g. secretary or treasurer, without the present limit of four years service. This will facilitate continuity and efficiency in the operation of the Society. Adoption of the amendment will not affect the composition of the Board (the number of members and the years they can serve). It only pertains to officers elected by the Board.

NOMINEES FOR THE BOARD OF GOVERNORS

Five Society members will be elected to the Board of Governors for two-year terms at the May 1984 annual meeting of the Azalea Society of America. The nominating committee has proposed a slate of seven individuals:

August A. Dietz, IV, Silver Spring, Maryland. Greenhouse Manager, Smithsonian Institution, Washington, D.C.; Glenn Dale Preservation Project Committee; Resource Development chairman for Brookside Gardens chapter; 1988 Tenth Anniversary ASA National Convention Committee.

Fred C. Galle, Hamilton, Georgia. Curator (retired) Callaway Gardens; Editor of the current revision of **THE AZALEA BOOK: THE AZALEAN** Editorial Advisory Board, 1983-present.

John M. Giordano, Jr., M.D., Mobile, Alabama. President of the Mobile chapter; Member of the American Rhododendron Society, American Holly Society, and American Magnolia Society.

Alice J. Holland, Silver Spring, Maryland. A founding member of the Society; Board of Governors, member 1978-present, recording secretary 1978-1979, secretary 1979-present.

John U. Rochester, Jr., Franklinton, Louisiana. President of the Louisiana chapter; Nurseryman; Board of Governors, Vice-president 1983-1984; **THE AZALEAN** Editorial Advisory Board 1983-present; Board of Directors, U.S. National Arboretum.

Mary L. Rutley, Silver Spring, Maryland. Brookside Gardens chapter membership chairperson 1979-present, Azalea Mart Committee 1979-present, 1988 Tenth Anniversary ASA National Convention Committee.

Frank B. White, Jr., Lanham, Maryland. A founding member of the Society; Board of Governors, member 1978-present, chairman 1978-1982; **THE AZALEAN** Editorial Advisory Board, 1983-present.

The five candidates receiving the highest number of ballots cast at the annual business meeting will serve as Governors with terms from May 13, 1984 until the annual business meeting of the Society in 1986.

GLENN DALE PRESERVATION PROJECT

Society members can view the azaleas at the Glenn Dale Plant Introduction Station on Sunday, May 6, 1984 from 9 a.m. until 3 p.m. You are invited to see the mature and historic azalea and rhododendron plantings and to participate with the committee in efforts to identify many of the plants while in flower, verify donated plants with their labels, evaluate progress of previous restoration efforts, and plant new donations in the collection area. Many more plants are needed to fill the collection of hybrid groups. Contact Roger Brown or Andy Dietz for more information.

THE CHAPTERS

Anna Jane Martin, past recording secretary of the Brookside Gardens chapter and a continuing member of the azalea show, azalea mart, and plant testing committees received the second Frederic P. Lee Commendation presented by the Brookside Gardens chapter at its annual meeting December 6, 1983. The Frederic P.

Lee Commendation is presented annually by the chapter for outstanding service in increasing the appreciation and knowledge of azaleas. Ryon Page, past chapter president and current chairman of the Society's Board of Governors was the first recipient in 1982.

Bill Miller, president of the Brookside Gardens chapter has been recognized for his gift of azaleas to Brookgreen Gardens located in Murrells Inlet, South Carolina, in the October 1983 issue of the Brookgreen Newsletter. The newsletter records that the "specimens have been added to other plants that have been donated in the past by Mr. Miller—, which are placed on a knoll along Cypress Road, [and] are being kept together as a collection."

Thomas E. Wingrove of the Ben Morrison chapter is another ASA member who has also been recognized for his gift of azaleas to a collection for others to enjoy. Tom has donated 160 azaleas from his garden to St. Mary's College in southern Maryland. In an article in the October 26, 1983 edition of **THE ENTERPRISE** published in Lexington, Park, Maryland, Edward T. Lewis, president of the College stated that the plants "will make a marvelous show in a highly visible area of the campus—especially next year, the 350th anniversary of Maryland." The article goes on to say that "as a result of this initial gift, St. Mary's College has the beginnings of what will eventually become the region's largest collection of azaleas open to the public view and enjoyment."

George Beasley, a member of the Ralph Pennington chapter and a distinguished nurseryman and hybridizer of deciduous azaleas, died January 3, 1984 following a five month battle with cancer. Mary, his wife, writes that she, their son Jeff, and Jeff's wife Lisa, are continuing operation of the nursery in the tradition George established.

The Mobile chapter together with the Louisiana chapter will host the 1985 National ASA convention. Russell Scott is the chairman of local arrangements and would appreciate hearing from you with any ideas or suggestions you might have. Specific dates have yet to be set, but the convention will take place during March-April, the earliest ASA convention to date. Make a note on your calendar for 1985 NOW!

Fred Sievers, president of the Tri-State chapter writes that the Indiana, Western Kentucky, and Southern Illinois areas had the hottest and driest summer in 1983 since 1936 and the past December turned out to be one of the coldest December's in many years. John Rochester, president of the Louisiana chapter, in a similar vein writes that the January freeze has done quite a bit of damage to leaves on most varieties, however, the flower buds still look sound. The Southern Indicas, John comments, received the worst beating, with most losing three-fourths of their leaves. "We had temperatures of 8 degrees fahrenheit with winds of 25-30 mph for 72 hours. This is the deep south not the midwest."

The unusually frigid temperatures extended across the country. Your editor's azaleas located some 10 miles northwest of Washington, D.C., experienced a prolonged dry summer followed by a warm late fall with a precipitous decline to minus 5 degrees fahrenheit with 20-30 mph winds Christmas eve. We had several days of temperatures hovering around five degrees, resulting in frozen rootballs in some coldframes.

Across the continent, Eleanor and Art Stubbs of the Northwest chapter write that for the Christmas holidays Portland had the lowest temperatures for the longest period of time that either of us can remember. The Columbia Gorge wind gave us some blustry and even blizzard conditions. Our valley is usually a "banana belt"—our son calls it "The Riviera," but we got the weather full tilt. Our greenhouse froze but the plants are adjusting and look fine now. The plants outside, I don't know. If things go according to "usual" that should be our winter, but who knows this year!

1983-1984 has been a year of unusual weather worldwide. For azalea growers it has provided another year for testing heat and cold tolerance. We hope that your plants have fared well and that 1984 will be a good year.

Chapter and member activities for inclusion in **ASA NEWS AND VIEWS** should be sent to the Editor three months prior to the month of publication desired in **THE AZALEAN**.

THE AZALEA CALENDAR

April		June	
7-8	Louisiana chapter azalea show. Hammond Square Mall, Hammond, Louisiana.	3	Northern Virginia chapter satsuki and late variety azalea garden tours.
	Mobile chapter azalea garden tour. Mobile, Alabama.	25	Brookside Gardens chapter azalea plant auction.
late	Tri-State chapter trip to natural azalea plantings of Carl Tenzel, Jackson, Mississippi.	July	
		15	Northern Virginia chapter cutting exchange.
May		September	
5	Brookside Gardens chapter azalea mart, Suburban Bank, Wheaton, Maryland, 8 a.m. Contact Richard Antony for information.	22	Glenn Dale Preservation Project work day.
6	Glenn Dale Preservation Project open house. Plant Introduction Station, Glenn Dale, Maryland. 9 a.m. - 3 p.m. Members can view the historic native and Ben Morrison hybrids, help identify plants in bloom, and assist in planting specimens donated to the collection. Contact Roger Brown or Andy Dietz for more information.	October	
		20	Glenn Dale Preservation Project work day.
5-6	Northwest chapter azalea exhibit.	November	
11-13	Sixth National Convention and Annual Meeting of the Azalea Society of America, Fredericksburg, Virginia. Contact Nancy Swell or Bill Bedwell for information.	17	Glenn Dale Preservation Project work day.
12	Louisiana chapter late variety azalea show, Franklinton, Louisiana.	December	
19-20	Brookside Gardens chapter sixth annual azalea show, Wheaton Shopping Plaza, Wheaton, Maryland. Contact Denise Stel- loh for information.	3	Brookside Gardens chapter annual meeting; presentation of Frederic P. Lee award for 1984.
20	Northern Virginia chapter azalea sale. Robert Gartrell chapter garden tours.		

THE AZALEA CALENDAR lists upcoming Society and chapter activities. Items to be included should be forwarded to the Editor together with name, address, and 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.