

Glenn Dale Azaleas on Mt. Hamilton— The Long and Winding Road to Today, Part I.

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[This informative and lengthy article about an important hybrid group will be completed with Part II in the Summer 2017 issue of *The Azalean*. That issue will also publish the extensive Table 4 that is described on p. 17, Ed.]

In late May, 2011, a very generous donor provided the Friends of the US National Arboretum (USNA) with \$1 million to support staffing needed to address routine maintenance of the legacy collection of azaleas growing on the south slopes of Mt. Hamilton. The gift meant that the Glenn Dale azaleas would be preserved for the benefit of the public and for the historical significance of their role in Benjamin Y. Morrison's breeding work. Figure 1 is a map showing the hillside. In 2013, the Agricultural Research Service provided funds to rejuvenate the 67-year-old planting and to remove excess saplings and invasive weeds. As shown in Figures 2 and 3, the Glenn Dale azaleas are

taking on new life. Moreover, the uncovering of plant labels in the beds has contributed to a more complete understanding of the hillside planting's vital role in the earliest stages of the Glenn Dale azalea breeding project.

Why Is This Planting Significant?

A popular theory about the hillside planting on Mt. Hamilton found in sources from both the USNA and in *The Azalea Book* by Frederic P. Lee was that it was simply a collection of 70,000 seedlings rejected but preserved by the breeder, Benjamin Yoe Morrison (1891-1966).¹ In 1992, West, Miller, and Bullock disproved this theory, and their findings were published in *The Azalean*.² The discovery of Bell-numbered labels on or underneath azaleas on Mt. Hamilton identifying numerous named and unnamed Glenn Dale azaleas casts doubt on the idea that they were rejected seedlings. Furthermore, documents which list distributions

▼ Figure 1—Azalea hillside in SW section of USNA where Morrison directed planting of his azalea selections 1946-1947.



Figure Courtesy of US National Arboretum



▲ Figure 2—View of USNA azalea collection in 2008.



▲ Figure 3—View of collection in 2016, two seasons after rejuvenation pruning.

originating from the National Arboretum prove that selections were made from the USNA after 1946. In short, the authors concluded that there could not have been more than 15,000 azaleas planted in the eight acres devoted to them and could see that the planting contained large sweeps of identical azaleas, of about 1,200 selections. Starting from Azalea Road there were 33 overlapping rows, up the hill to the crest of Mt. Hamilton’s south face. For the purposes of this article, each sweep of a single selection may be referred to as a “group” or “clonal grouping.” The 70,000 seedlings actually represent the total number of seedlings raised, examined and studied by Morrison, not the number planted on Mt. Hamilton.

Our research shows that the hillside planting was actually a part of Morrison’s azalea research transferred from Glenn Dale to the National Arboretum around the time of World War II (and not crosses made in 1939 with Chugai Satsuki azaleas – they came later).² After more than 25 years of maintaining the azaleas on the hillside, the author has discovered over 190 labels bearing Bell numbers of named and unnamed azaleas that were among Morrison’s earliest crosses.² Forty-three of these labels identify introduced Glenn Dale azaleas (see Table 1). The presence of these labels and what we know about the history of Morrison’s effort to produce superior azaleas for the Washington, DC, area confirm that the hillside planting at the USNA was an important stage in the 25-year breeding program that produced the Glenn Dale azaleas. Not all labels found were Bell numbers. A small number of the labels found identify the parent plants of some of the Glenn Dales. Some of the labels are PI (USDA Plant Introduction) numbers, some are other azaleas cultivars, and a few of the Bell numbers found identify seed lots. For this article, I will focus on the 190 Bell-numbered labels (see Table 2) assigned to named and unnamed Glenn Dale selections comprising 95% of the labels found on Mt. Hamilton. A selection is referred to by a Bell number until it is formally introduced at which time it

is referred to by its cultivar name. An upper-case B before a number denotes a Bell number.

What are the Bell numbers?

Bell numbers are simply the accession numbers used for all plants, not just azaleas, at the Glenn Dale Plant Introduction Station, a.k.a. “Bell Station.”³ The following excerpt from one of Morrison’s unpublished working papers found at Glenn Dale explains the Bell numbers: “At Glenn Dale, or later in Takoma Park, when a seed harvest was made from a cross, a Bell number was assigned to the entire population under which it was grown to flowering. If selections were made from that population, individual Bell numbers were given to each plant. Later, those plants that were selected to be given PI (Plant Introduction) numbers were chosen from these selected clones.”⁴ Morrison used the term “clone” instead of “cultivar” in his writings up until the final selection, naming, and introduction of the cultivar. Once introduced, the Glenn Dale azaleas were given a PI number.

By studying the selection lists from which found Bell-numbered labels originated, the author can account for 804 selections that were likely planted on Mt. Hamilton. Based on their dates of introduction, the Bell numbers found, and historic documents, the author estimates a total of 174 Glenn Dale cultivars were named and introduced from the planting on Mt. Hamilton. The author believes that the massed planting on Mt. Hamilton contains all of the selections that came from Morrison’s 1937 and 1939 studies. If this is correct, then the following additional Glenn Dale cultivars (see Table 3) might be found among the azaleas on Mt. Hamilton and represent important original source material for one the USNA’s most significant breeding programs.

Today, there are fewer than 4,000 azaleas remaining from the original planting. The author estimates that less than 400 of the original 1,200 original selections are alive today. While the labels were not always found on plants, the combination

Table 1—Introduced Glenn Dale Azaleas

‘Abbot’ (B32512)	‘Fanfare’ (B32246)	‘Paradise’ (B32192)
‘Ambrosia’ (B32378)	‘Favorite’ (B32261)	‘Pirate’ (B32247)
‘Antares’ (B32477)	‘Ganymede’ (B35295)	‘Robinhood’ (B32612)
‘Astarte’ (B32548)	‘Gladiator’ (B27489)	‘Satrap’ (B32140)
‘Bacchante’ (B32463)	‘Grandee’ (B32417)	‘Sebastian’ (B32303)
‘Bridal Veil’ (B32137)	‘Gypsy’ (B32442)	‘Serenity’ (B35351)
‘Burgundy’ (B27488)	‘Horus’* (B32585)	‘Shannon’* (B32142)
‘Cantabile’ (B32276)	‘Jongleur’ (B32481)	‘Simplicity’ (B32445)
‘Caprice’ (B32347)	‘Magic’ (B32252)	‘Swashbuckler’ (B32587)
‘Captivation’ (B32245)	‘Marmora’ (B32391)	‘Tango’ (B32479)
‘Cinderella’ (B32140)	‘Melanie’ (B32204)	‘Thisbe’ (B32251)
‘Duenna’ (B27467)	‘Modesty’ (B32320)	‘Touchstone’* (B32609)
‘Enchantment’ (B32255)	‘Orpheus’* (B35296)	‘Tristan’ (B32486)
‘Evangeline’ (B32482)	‘Padre’ (B32293)	‘Troubadour’ (B32136)
‘Fairy Bells’ (B32540)		‘Vanity’ (B32256)

(* = Introduced, but never distributed)

The Bell number for *Rhododendron simsii*, known as “Yeung shaan hung”, (B32453) was also found. The author and her volunteers are still finding new Bell-numbered labels monthly.

of the proximity of the labels and the characteristics of the nearby plants can be used to draw some conclusions about the possible identities of the clonal groupings. The Bell-numbered labels found represent a specific cross section of time in Morrison’s body of work comprising the pre-WWII era of the Glenn Dale azalea breeding program.

The Glenn Dale Azalea Breeding Program

As Chief of the Division of Plant Exploration and Introduction of the US Department of Agriculture (1934-1948) and Acting Director of the US National Arboretum (1937-1951), Morrison had access to plants that were unique and rare in the United States at the time. He was originally hired to work on roses, continuing the work of recently deceased Dr. Walter Van Fleet, but his love of azaleas led him to make his first azalea crosses at his home, on his own time as early as 1928. Soon, he was able to convince the Department of Agriculture to allow him to carry on his breeding research in an official capacity at the USDA Plant Introduction Station at Glenn Dale, Maryland. In seeking to introduce a “race” of azaleas suitable to the climate of the mid-Atlantic region, Morrison’s goals included increased hardiness, good form, large flowers, many colors, and an extended bloom season. His first official crosses in 1929 were between azaleas well known for hardiness, brought from Japan in the early twentieth century. For example, his very first cross (B11452) *R. kaempferi* × *R. mucronatum*, which resulted in the selection of ‘Ivory’ (B32448), ended up becoming the seed parent to 29 of his later introductions. Figures 4 and 5 illustrate his first two crosses.

Early crosses using other species and available cultivars were also introduced into the mix. The most significant groups of parent plants of these early crosses were the Kurume azaleas brought from Japan in 1928 by USDA explorer R. Kent Beattie, and the Kaempferi hybrids that had been imported from Europe. In 1929, Morrison made over 100 crosses resulting in the B27000 series. Many selections from these early crosses made their way to the Mt. Hamilton planting, including many that were never introduced. One species Morrison used was PI71356, *Rhododendron simsii*, collected as seed from Anhui Province, China, that was known locally as “Yeung shaan hung” (PI71356), which is not a cultivar name. At the time of collection, this was the name given by Agricultural Explorer F. A. McClure, when he brought back the seed in January 1927.

One of the more significant cultivars used in Morrison’s breeding was *R. ‘Vittatum’* (syn. ‘Vittatum Fortunei’) (B10159) which came from Fruitland Nurseries in Georgia in 1928. The species background of *R. ‘Vittatum’* is controversial, but its tendency to produce (sport) flowers with numerous color shades, patterns, striping, and blotches on the same plant intrigued Morrison.^{5,6} He used it repeatedly in his crosses, yielding cultivars including ‘Dimity’, ‘Delight’, ‘Zephyr’, ‘Geisha’, and ‘Minuet’. Not all selections derived from ‘Vittatum’ have flowers with the characteristic striping, but those that do still interest visitors and collectors today. A quick count shows ‘Vittatum’ is the seed parent to 71 Glenn Dale azaleas and pollen parent to five, including ‘Duenna’ and ‘Quakeress’. Another 41 Glenn Dales selected used either ‘Duenna’ or ‘Quakeress’ as one of

Table 2—Bell-Numbered Azaleas Found on Mt. Hamilton

Bell #s FOUND (1992-2016)	Bell #, Seed Lot (original cross)	Seed Parent Name	Seed parent Bell #1	Pollen Parent Name	Pollen parent Bell #2	CULTIVAR NAME, if selected	Location, (MH-GD #xxx curator's notes) + cv.
32453	8901	Rhodo. Yeung shaan hung	PI71356			'Yeung shaan hung'	HS-10, #022 (accessioned)
27444	12762	Splendens	PI78385	Vittata fortunei	B10159		label said "2 plants", unk loc. #095
32347	12762	Splendens	PI78385	Vittata fortunei	B10159	'Caprice'	HS-3, #207
27444-K	12762	Splendens	PI78385	Vittata fortunei	B10159		HS-10, #095
27443	13360	Rhodo s.p.	PI81661				HS-10, #189
32224	13360	Rhodo s.p.	PI81661				HS-1, (Juneglow or Epilogue)
32227	13360	Rhodo s.p.	PI81661				HS-10, near #198
32232	13360	Rhodo s.p.	PI81661				HS-10, label said "5 plants" near #'s 024, 090 & 114
32234	13360	Rhodo s.p.	PI81661				HS-3, (Juneglow or Epilogue)
32235	13360	Rhodo s.p.	PI81661				HS-4, (Juneglow or Epilogue)
27403	13558	Vittata fortunei	B10159	Ho-Oden	PI77112		HS-1, #291 (Festive)
27404	13558	Vittata fortunei	B10159	Ho-Oden	PI77112		HS-1, #087
27416	13559	Vittata fortunei	B10159	Marta			HS-8, #185 or #144
32142	13560	Vittata fortunei	B10159	Maxwelli	B10599	'Shannon'	HS-3, #169 or #374
32152	13563	Vittata fortunei	B10159	Amoena			HS-2, #180
32477	13564	Vittata fortunei	B10159	Alice	B10993	'Antare's	HS-4, #231 (Antares)
32479	13564	Vittata fortunei	B10159	Alice	B10993	'Tango'	HS-4, #227
32481	13564	Vittata fortunei	B10159	Alice	B10993	'Jongleur'	HS-1, #165 (Jongleur)
32482	13564	Vittata fortunei	B10159	Alice	B10993	'Evangeline'	HS-2, #042, 2 labels found (Evangeline)
32486	13564	Vittata fortunei	B10159	Alice	B10993	'Tristan'	HS-2, #359 (Tristan)

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Bell #s FOUND (1992-2016)	Bell #, Seed Lot (original cross)	Seed Parent Name	Seed parent Bell #1	Pollen Parent Name	Pollen parent Bell #2	CULTIVAR NAME, if selected	Location, (MH-GD #xxx curator's notes) + cv.
32136	13565	Vittata fortunei	B10159	Willy	B11002	'Troubador'	HS-2, #031 or #182 - Troubador
27411	13566	Vittata fortunei	B10159	Indica alba	B10440		"one plant" on label
32144	13566	Vittata fortunei	B10159	Indica Alba	B10440		HS-4, #119
27391	13568	Vittata fortunei	B10159	Gibiyama	PI77091		HS-4, #156
27392	13568	Vittata fortunei	B10159	Gibiyama	PI77091		HS-3
27474	13569	Vittata fortunei	B10159	Surisume	PI77143		HS-8, label said "one plant"
27474	13569	Vittata fortunei	B10159	Surisume	PI77143		HS-8, near #233
32400	13569	Vittata fortunei	B10159	Surisume	PI77143		HS-4
27449	13571	Vittata fortunei	B10159	Miyagimo	PI77144		HS-2, #083 (Geisha)
2745_	13571	Vittata fortunei	B10159	Miyagimo	PI77144		HS-8, #269 (Pixie)
27457	13571	Vittata fortunei	B10159	Miyagimo	PI77144		HS-8, #088, label said "4 plants"
27478	13571	Vittata fortunei	B10159	Miyagimo	PI77144		HS-2, #357
27480	13571	Vittata fortunei	B10159	Miyagimo	PI77144		HS-10
27481	13571	Vittata fortunei	B10159	Miyagimo	PI77144		HS-10, #152
27484	13571	Vittata fortunei	B10159	Miyagimo	PI77144		Unk location; label said "practically the same as B27482"
35348	13571	Vittata fortunei	B10159	Miyagimo	PI77144		HS-2, #174
2745_	13571	Vittata fortunei	B10159	Miyagimo	PI77144	(fragment found)	
27398	13574	Vittata fortunei	B10159	Louise	B11000		HS-3, #024 (Dimity)
27401	13574	Vittata fortunei	B10159	Louise	B11000		HS-1, #073 (Limerick)
32137	13574	Vittata fortunei	B10159	Louise	B11000	'Bridal Veil'	Unknown loc; #309 or #339

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32138	13574	Vittata fortunei	B10159	Louise	B11000		HS-2, #176 (Bacchante)
32140	13574	Vittata fortunei	B10159	Louise	B11000	'Cinderella' and/or 'Satrap'	HS-10, accessioned as "B-32140"
32463	13574	Vittata fortunei	B10159	Louise	B11000	'Bacchante'	HS-4, #049 or #268 (Bacchante)
27459	13576	Vittata fortunei	B10159	Kyu miyagimo	PI77114		Unk location
32303	13576	Vittata fortunei	B10159	Kyu miyagimo	PI77114	'Sebastian'	HS-3, #098
32304	13576	Vittata fortunei	B10159	Kyu miyagimo	PI77114		HS-1, #013 (Samite)
'	13577	Vittata fortunei	B10159	H.E.A. #34			HS-3, #054 (Ambrosia)
32381	13577	Vittata fortunei	B10159	H.E.A. #34			HS-4, #014
35377	13577	Vittata fortunei	B10159	H.E.A. #34			HS-4, near #049
27467	13581	Indica alba	PI71356	Vittata fortunei	B10159	'Duenna'	HS-3, #058 (Duenna)
32352	13582	Indica alba	PI71356	Yeung shaan hung	PI71356		Location unk, #007 (Dawning)
32358	13582	Indica alba	PI71356	Yeung shaan hung	PI71356		Location unk, (sister to Dawning, Concordia, Vision and Desire) #004, 010, 027, 030, 040, 076 and so on.
32360	13582	Indica alba	PI71356	Yeung shaan hung	PI71356		Loc. Unk.
32363	13582	Indica alba	PI71356	Yeung shaan hung	PI71356		HS-3, #006 or #007
32391	13585	Margotten	B10438	Warai gao	PI77130	'Marmora'	HS-4, (SINGLE) #242 (Marmora)
35375	13601	Willy	B11002	Momo zono	PI77108		HS-4, #193
27439	13604	Willy	B11002	Yaeshojo	PI77100		HS-10, #110
27439	13604	Willy	B11002	Yaeshojo	PI77100		HS-8, #233
32216	13604	Willy	B11002	Yaeshojo (H-H scarlet red Kurume)	PI77100		HS-4, #388

Table 2—Bell-Numbered Azaleas Found on Mt. Hamilton continued

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32429	13604	Willy	B11002	Yaeshojo	PI77100		HS-8
32165	13605	Jeanette	B10998	Kaempferi	B10289		HS-1, #076
32166	13605	Jeanette	B10998	Kaempferi	B10289		HS-3, label said "4 plants"
32172	13605	Jeanette	B10998	Kaempferi	B10289		HS-3, #261 (Carbineer)
32173	13605	Jeanette	B10998	Kaempferi	B10289		HS-10, #027 (Tokay)
32175	13605	Jeanette	B10998	Kaempferi	B10289		HS-3, label said "9 plants", #261
32178	13605	Jeanette	B10998	Kaempferi	B10289		HS-3
32288	13606	Alice	B10993	Vittata fortunei	B10159		HS-10, #338
32290	13606	Alice	B10993	Vittata fortunei	B10159		HS-4, #045 or #364
32293	13610	Mrs. Carmichael	PI78381	Willy	B11002	'Padre'	HS-3, #340 (Padre)
32296	13610	Mrs. Carmichael	PI78381	Willy	B11002		HS-2, #371
27433	13611	Mrs. Carmichael	PI78381	Alice	B10993		HS-2, #265
32157	13611	Mrs. Carmichael	PI78381	Alice	B10993		HS-2, #182
32158	13611	Mrs. Carmichael	PI78381	Alice	B10993		HS-2, #089
27432	13613	Macrantha Orange (indicum)	PI78382	Azuma shibori	PI77076		HS-8, #188
32192	13613	Macrantha orange	PI78382	Azuma shibori (white H-H, NA273, 'Snow')	PI77076	'Paradise'	HS-3, #158 (Paradise)
32193	13613	Macrantha orange	PI78382	Azuma shibori	PI77076		Unknown loc.
32196	13613	Macrantha orange	PI78382	Azuma shibori	PI77076		HS-3, #363
32197	13613	Macrantha orange	PI78382	Azuma shibori	PI77076		HS-4, #161

Table 2—Bell-Numbered Azaleas Found on Mt. Hamilton continued

Bell #s FOUND (1992-2016)	Bell #, Seed Lot (original cross)	Seed Parent Name	Seed parent Bell #1	Pollen Parent Name	Pollen parent Bell #2	CULTIVAR NAME, if selected	Location, (MH-GD #xxx curator's notes) + cv.
32198	13613	Macrantha orange	PI78382	Azuma shibori	PI77076		HS-3, #281
32200	13613	Macrantha orange	PI78382	Azuma shibori	PI77076		HS-2, #132
32201	13613	Macrantha orange	PI78382	Azuma shibori	PI77076		HS-2, near #294
32212	13613	Macrantha orange	PI78382	Azuma shibori	PI77076	'Melanie'	HS-4, #238 (Melanie)
32214	13613	Macrantha orange	PI78382	Azuma shibori	PI77076		HS-4, #271
32265	13613	Macrantha orange	PI78382	Azuma shibori	PI77076		HS-4, #270
32266	13613	Macrantha orange	PI78382	Azuma shibori	PI77076		HS-2
35327	13613	Macrantha Orange (indicum)	PI78382	Azuma shibori	PI77076		HS-3
35328	13613	Macrantha Orange (indicum)	PI78382	Azuma shibori	PI77076		HS-1
32421	13614	Macrantha orange	PI78382	Mikawa murasaki	PI77102		HS-1, ("others elsewhere" written on back of label)
32422	13614	Macrantha orange	PI78382	Mikawa murasaki	PI77102		Unknown location
32424	13614	Macrantha orange	PI78382	Mikawa murasaki	PI77102		HS-4 (2 labels found)
32427	13614	Macrantha orange	PI78382	Mikawa murasaki	PI77102		HS-4
32245	13615	Macrantha orange	PI78382	Momo zono	PI77108	'Captivation'	HS-2
32246	13615	Macrantha orange	PI78382	Momo zono	PI77108	'Fanfare'	HS-3, #369 (Captivation)
32247	13615	Macrantha orange	PI78382	Momo zono	PI77108	'Pirate'	HS-8, #365 (Fanfare)
32251	13615	Macrantha orange	PI78382	Momo zono	PI77108	'Thisbe'	HS-3, #370 (Pirate)
32252	13615	Macrantha orange	PI78382	Momo zono	PI77108	'Magic'	HS-4, above #388
32255	13615	Macrantha orange	PI78382	Momo zono	PI77108	'Enchantment'	HS-4, #066 (Magic)
							Unknown loc; label said "1 plant"; possibly HS-10, #115

Table 2—Bell-Numbered Azaleas Found on Mt. Hamilton continued

Bell #s FOUND (1992-2016)	Bell #, Seed Lot (original cross)	Seed Parent Name	Seed parent Bell #1	Pollen Parent Name	Pollen parent Bell #2	CULTIVAR NAME, if selected	Location, (MH-GD #xxx curator's notes) + cv.
32256	13615	Macrantha orange	PI78382	Momo zono	PI77108	'Vanity'	(found 3 of these, different locations; one said "1 plant" on label) possibly HS-2 #133
32261	13615	Macrantha orange	PI78382	Momo zono	PI77108	'Favorite'	HS-3; #168 (Favorite)
32776	13615	Macrantha orange	PI78382	Momo zono	PI77108		HS-8, #230; #365
35342	13615	Macrantha Orange (indicum)	PI78382 (B11008)	Momo zono	PI77108		HS-4
3224_	13615	Macrantha Orange (indicum)		Momozono		(fragment found)	HS-3
27464	13617	Splendens	PI78385	Vittata fortunei	B10159		HS-1, #087, (Fantasy)
32276	13617	Splendens	PI78385	Vittata fortunei	B10159	'Cantabile'	HS-4, #062 (Cantabile)
32277	13617	Splendens	PI78385	Vittata fortunei	B10159		HS-10
32437	13618	Indica lilacina	B10357	Willy	B11002		HS-4, #135
32441	13618	Indica lilacina	B10357	Willy	B11002		HS-4, #231
32442	13618	Indica lilacina	B10357	Willy	B11002	'Gypsy'	HS-2, #172, #214 (Gypsy)
32444	13618	Indica lilacina	B10357	Willy	B11002		HS-3, near #171, 172
32445	13618	Indica lilacina	B10357	Willy	B11002	'Simplicity'	HS-4, #212, #347 or #359 (Simplicity)
32221	13625	Hinodigiri		Willy	B11002		HS-3, #056
32223	13625	Hinodigiri		Willy	B11002		HS-3, near #372
32338	13627	Hinodigiri		Azuma shibori	PI77076		HS-8, #230
27488	13628	Vittata fortunei	B10159	Hinodigiri		'Burgundy'	label said "Sent mixed with lot" (Burgundy)
27488-A	13628	Vittata fortunei	B10159	Hinodigiri		'Burgundy'	HS-2, #043 (Burgundy)
27489	13628	Vittata fortunei	B10159	Hinodigiri		'Gladiator'	HS-4, #277 (Gladiator)

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32473	13628	Vittata fortunei	B10159	Hinodigiri (HEA)			HS-4, #049
27488-A	13628	Vittata fortunei	B10159	Hinodigiri		'Burgundy'	HS-4, #043
32164	13631	Kaempferi (late)	B10289	Osakazuki (NA 4170, rose-pink form of R. indicum)	PI77094		HS-3, #059
32404	13637	Kaempferi	B10289	Maxwelli	B10579		HS-2
32405	13637	Kaempferi	B10289	Maxwelli	B10579		HS-10, label said "1 plant", #334
32408	13637	Kaempferi	B10289	Maxwelli	B10579		HS-8
32410	13637	Kaempferi	B10289	Maxwelli	B10579		HS-4, uphill from #044
32318	13732	Yeung shaan hung	PI71356	Indica alba	B10440		HS-4, #261
32320	13732	Yeung shaan hung	PI71356	Indica alba	B10440	'Modesty'	HS-4, #387 (Modesty)
32322	13732	Yeung shaan hung	PI71356	Indica alba	B10440		HS-2, #319
32326	13732	Yeung shaan hung	PI71356	Indica alba	B10440		HS-3, #006 (Temptation)
32332	13732	Yeung shaan hung	PI71356	Indica alba	B10440		HS-4, #399
32335	13732	Yeung shaan hung	PI71356	Indica alba	B10440		HS-10, #211; 2nd label found HS-4, #340 (over 3" diam)
35351	13732	Yeung shaan hung	PI71356	Indica alba	B10440	'Serenity'	HS-2, #012 (Serenity) (2 labels found)
35355	13732	Yeung shaan hung	PI71356	Indica alba	B10440		HS-2, near B-32667; 2nd one found HS-4 "5 plants" written on back of label
35295	15301	Fielder's White	B10447	Kaempferi	B10289	'Ganymede'	HS-2, #359 (Ganymede)
32569	15305	Macrantha deep salmon	PI78380	Hazel Dawson	B11152		Unk. Loc.

Table 2—Bell-Numbered Azaleas Found on Mt. Hamilton continued

Bell #s FOUND (1992-2016)	Bell #, Seed Lot (original cross)	Seed Parent Name	Seed parent Bell #1	Pollen Parent Name	Pollen parent Bell #2	CULTIVAR NAME, if selected	Location, (MH-GD #xxx curator's notes) + cv.
32661	15305	Macrantha deep salmon	PI78380	Hazel Dawson	B11152		HS-3
32667	15305	Macrantha deep salmon	PI78380	Hazel Dawson	B11152		HS-3
32670	15305	Macrantha deep salmon	PI78380	Hazel Dawson	B11152		HS-3, #005, #294
32617	15320	Vittata fortunei	B10159	Warai gishi	PI77132		HS-3
32618	15320	Vittata fortunei	B10159	Warai gishi	PI77132		HS-3
32619	15320	Vittata fortunei	B10159	Warai gishi	PI77132		HS-3
32614	15321	George Franc	B10430	Yaeshojo	PI77100	'Robinhood'	Unknown loc.
32626	15321	George Franc	B10430	Yaeshojo	PI77100		HS-10, #233
32632	15324	Vittata fortunei	B10159	Osakazuki	PI77094		HS-3, #002
32495	15339	Butheana	B11008	Macrantha Orange	B11008		HS-3
32508	15340	Macrantha deep salmon	PI78380	Hatsushimo	PI77138		HS-3, #202
32512	15340	Macrantha deep salmon	PI78380	Hatsushimo	PI77138	'Abbot'	HS-3
32518	15340	Macrantha deep salmon	PI78380	Hatsushimo	PI77138		HS-2
32520	15340	Macrantha deep salmon	PI78380	Hatsushimo	PI77138		HS-3, #056
32639	15357	Indica alba	B10440	Maxwelli	B10579		HS-3
32541	18407	Osakazuki	PI77094	Kagaribi	PI77102		HS-3, #298
32544	18407	Osakazuki	PI77094	Kagaribi	PI77102		HS-3, #284 (Jamboree)
32547	18407	Osakazuki	PI77094	Kagaribi	PI77102		HS-3, #343 or #398
32548	18407	Osakazuki	PI77094	Kagaribi	PI77102	'Astarte'	HS-3, 2 labels found
32602	18407	Osakazuki	PI77094	Kagaribi	PI77102		HS-4, #101

Table 2—Bell-Numbered Azaleas Found on Mt. Hamilton continued

Bell #s FOUND (1992-2016)	Bell #, Seed Lot (original cross)	Seed Parent Name	Seed parent Bell #1	Pollen Parent Name	Pollen parent Bell #2	CULTIVAR NAME, if selected	Location, (MH-GD #xxx curator's notes) + cv.
32605	18407	Osakazuki	PI77094	Kagaribi	PI77102		HS-3, #070, 233, 188 or 143 (2 labels found)
35204	18407	Osakazuki	PI77094	Kagaribi	PI77102		HS-1, #031
35215	18407	Osakazuki	PI77094	Kagaribi	PI77102		HS-10, near #206 ("6 plants" written on back of label)
32553	18410	Malvatica	B10571	Macrantha deep salmon	B11007		Unk. Loc.
32557	18410	Malvatica	B10571	Macrantha deep salmon	B11007		HS-3
32559	18410	Malvatica	B10571	Macrantha deep salmon	B11007		HS-3, 2 labels found
35222	18410	Malvatica	B10577	Macrantha deep salmon	B11007		HS-2
35296	18410	Malvatica	B10577	indicum (deep salmon)	B11007	'Orpheus'	Unk. Location
32587	18412	Malvatica	B10577	Satsuki	PI77087	'Swashbuckler'	HS-3, uphill from #007 (Swashbuckler)
32589	18412	Malvatica	B10577	Satsuki	PI77087		HS-3
32590	18412	Malvatica	B10577	Satsuki	PI77087		HS-3, #379
32417	18414	Yozakura	PI77096	Kagaribi	PI77102	'Grandee'	HS-3, #307
32540	18414	Yozakura	PI77096	Kagaribi	PI77102	'Fairy Bells'	Unk. Loc.; possibly #098 or #255
32609	18416	Indica rosea	B10578	Macrantha deep salmon	B11007	'Touchstone'	HS-3, #391 (Touchstone)
32566	18421	Osakazuki	PI77094	Flame			HS-3, #373
32567	18421	Osakazuki	PI77094	Flame			HS-3
32568	18421	Osakazuki	PI77094	Flame			HS-3
32577	18421	Osakazuki	PI77094	Flame			HS-3
32585	18421	Osakazuki	PI77094	Flame		'Horus'	Unk. Loc. (Horus)
35209	18421	Osakazuki	PI77094	Flame			HS-10

the parents. By 1937, Morrison made his first Glenn Dale selections from the 1929 crosses, resulting in the B27000 series and 121 of the first Glenn Dale azaleas introduced.

In 1930 and again in 1932, Morrison conducted additional crosses, this time including several of his earlier crosses that interested him and back crosses, resulting in the 1939 list of 535 selections by Morrison, F. C. Bradford, and Claude Hope.⁴ (Table 4 shows this complete listing; it will be published in the Summer 2017 issue of *The Azalean*.) These crosses incorporated azaleas such as *R. simsii* from southern China, white and pink forms of *R. mucronatum*, and 'Fielder's White' (a pure white Southern Indian hybrid with large flowers from Magnolia Nursery introduced in 1870). *R. yedoense* var. *poukhanense* (lavender, spreading, hardy) was added to the mix, as were cultivars of *R. indicum*; for example, 'Macranthum' (superior foliage and later bloom, but not hardy in the mid-Atlantic region). By incorporating several forms of the Japanese species *R. indicum* and Satsuki azalea cultivars in 1939 in his breeding program, Morrison was able to successfully introduce Glenn Dale azaleas with a much later season of bloom and nicer foliage characteristics that proved hardy for the mid-Atlantic region. Ultimately, Morrison introduced 454 Glenn Dale cultivars.⁷ The Glenn Dales on the southern slopes of Mt. Hamilton represent the bulk of his earliest work. This article is the story of their long and winding road to today.

Rationale for Moving the Glenn Dale Project to the National Arboretum

In 1939, B. Y. Morrison along with colleagues from the Bureau of Plant Industry, F. C. Bradford and Claude Hope, made over 530 selections from Morrison's azalea breeding work in the woods at Glenn Dale.⁴ These were assigned Bell numbers B32134 through B32678 and were from the 1930 and 1932 crosses mentioned earlier in this article. They were then propagated and later sent to be planted at the USNA. As described in West et.al, planting was accomplished by the end of 1947.²

Table 3. Additional Glenn Dale Azaleas Believed by Author to Have Been Planted on Mt. Hamilton

'Alabaster'	'Emblem'	'Nectar'
'Alexandria'*	'Epilogue'	'Opera'
'Allure'	'Evensong'	'Pastel'
'Anchorite'	'F. C. Bradford'	'Phoebe'
'Aphrodite'	'Fantasy'	'Picador'
'Arcadia'	'Fashion'	'Pied Piper'
'Ballet Girl'	'Festive'	'Pilgrim'
'Beacon'	'Gaiety'	'Pinkie'
'Berceuse'	'Gawain'	'Pixie'
'Bettina'	'Geisha'	'Pontiff'
'Bopeep'	'Glacier'	'Portent'
'Bowman'	'Glamour'	'Prelate'
'Brangaene'	'Gracious'	'Prudence'
'Buccaneer'	'Granat'	'Quakeress'
'Candlelight'*	'Greeting'	'Quest'
'Capella'	'Hopeful'	'Red Bird'
'Caress'	'Illusion'	'Red Robe'
'Carmel'	'Isolde'	'Refrain'
'Cascade'	'Ivory'	'Remembrance'
'Cathy'	'Jamboree'	'Revery'
'Cavalier'	'Jingle'	'Reward'
'Celestial'	'Joya'	'Romance'
'Chloe'	'Jubilant'	'Roselight'
'Circe'	'Juneglow'	'Samite'
'Clarion'	'Kashmir'	'Sappho'
'Constance'	'Katinka'	'Satin Robe'
'Consuela'	'Kenwood'	'Seneca'
'Coquette'	'Limerick'	'Serenade'
'Coralie'	'Litany'	'Signal'
'Corydon'	'Lustre'	'Sligo'
'Cremona'	'Madeira'	'Souvenir'
'Damozel'	'Marionette'	'Stardust'
'Daphnis'	'Marvel'	'Tanager'
'Dawning'	'Mascot'	'Tartar'
'Dayspring'	'Matins'	'Temptation'
'Delight'	'Mavourneen'	'Tokay'
'Delos'	'Mayflower'	'Valkyrie'
'Demure'	'Medea'	'Vintage'
'Desire'	'Megan'	'Violetta'
'Dimity'	'Merlin'	'Vision'
'Dream'	'Minstrel'	'Whirlwind'
'Dulcimer'	'Minuet'	'Winner'
'Echo'	'Morning Star'	'Witchery'
'Effective'	'Naxos'	

* = Introduced, but never distributed.



Photo Dan Krabill

▲ Figure 4—Glenn Dale azalea 'Ivory', the first cross Ben Morrison made.

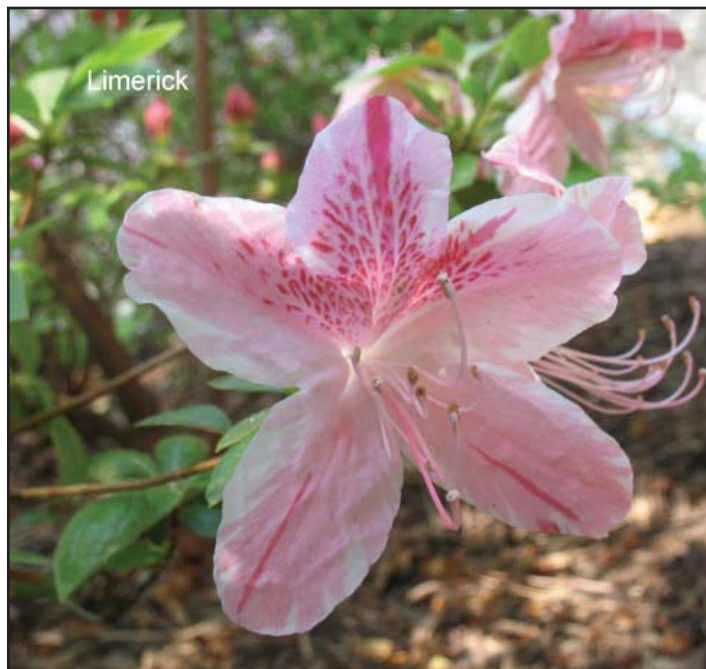


Photo Bob Steiloh

▲ Figure 5 —Morrison's second selection, 'Limerick'.

More than half of the Glenn Dale cultivars that made it into the trade were selected from the USNA plantings by October 1953 when the USDA published Agriculture Monograph No. 20, *The Glenn Dale Azaleas*.⁷ Incidentally, 1939 was also the year Morrison made his final azalea crosses with the Chugai Satsuki azaleas, resulting in the B33300 series. The author has found at least six Bell-numbered seed lots in the woodland planting of azaleas above the formal Morrison Garden and believes this may be where the remainder of the final Glenn Dale azaleas were selected.

In 1942, all work on the Glenn Dale azalea project had to stop to make way for war-related efforts. The Glenn Dale greenhouses and cold frames were needed for production of crops such as *Cinchona officinalis* (for quinine). By this time, Morrison was the acting director of the National Arboretum, which would not open to the public until 1958. Morrison proceeded to propagate everything of significance in his azalea project and then raised ten to thirty plants of each selection in containers. These were moved to the USNA and temporarily placed in cold frames near the present site of the Washington Youth Garden. By 1946 they were ready for planting. Morrison's plans for the hillside display included its use for making the final selections; but when all was said and done, he wanted the display "to be among the finest in the country." He selected the south slopes of Mt. Hamilton for the planting because of their loamy soils and southern exposure. Between 1946 and 1947, he organized his labor force to carefully terrace over 33 rows on the contours from the road up to the top of the hill. He lined out the rows so that spacing and adherence to the contours were maintained uniformly. Numerous bales of peat moss were incorporated into the rows prior to planting. And, most significantly, we now know that he attached Bell numbers to each grouping for use in making his final selections.

The author is proud to work among the dedicated staff and volunteers at the US National Arboretum, and will continue to preserve the work that has gone on before us, making the USNA a destination for people interested in azaleas and will continue to curate the azalea collection with the utmost care. It is the author's hope that at some time in the future these azaleas will then be useful for possible future breeding and selection efforts. Some of the unique older cultivars and species found could even help us to learn more about the genetic relationships among azalea species and the complex cultivars that we grow and enjoy today.

References and Notes

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3. Miller III, W. C. and West, R. T. *The Bell Book: A Companion to Agriculture Monograph 20*. Bethesda, MD: The Azalea Works 1996. Available on the Internet at www.theazaleaworks.com.
4. Unpublished document found in the files at the Glenn Dale Plant Introduction Station ("Bell Station") that lists Morrison's 1939 Rhododendron Selections, May, 1939, "selected from plants in the woods planting by Mr. Morrison, Mr. Bradford and Mr. Hope," – The author expanded the list into an Excel spreadsheet format indicating the list is for 535 selections. Mr. Bradford was Frederick Charles

“F. C.” Bradford, Superintendent at the Glenn Dale Plant Introduction Station and Morrison’s boss. Mr. Hope was Claude Hope, Horticulturist/Plant Breeder, eventually responsible for introducing the “Elfin” series of *Impatiens* to the nursery industry.

5. Wilson, Ernest Henry, and Rehder, Alfred. *A Monograph on Azaleas: Rhododendron Subgenus Anthodendron*. Cambridge MA: University Press 1921. Wilson published the name for *R. ‘Vittatum’* as *R. simsii* var. *vittatum* E. H. Wilson. Plants collected by Robert Fortune (1812–1880) would often be labelled with “fortunei” as part of their name, thus “Vittata fortunei” was recorded in Morrison’s records.
6. West, R. T., and Miller III, W. C. “*Rhododendron simsii*, ‘Vittatum’ and the Glenn Dale Azaleas.” *The Azalean*. March 1996. 18(1): 4-9.
7. Morrison, B. Y. *The Glenn Dale Azaleas*. U.S.D.A. Agriculture Monograph 20. Washington, DC. October, 1953. Lists and describes 454 azaleas introduced by the USDA known as Glenn Dale hybrid azaleas.

Horticulturist Barbara L. Bullock works for the USNA in Washington DC and has been curator of the extensive azalea and rhododendron collections there since January 1990. She was a recipient of the Brookside Gardens Chapter’s Frederic P. Lee Commendation in 1997. She participated in both the Glenn Dale Preservation Project and the Ten Oaks Glenn Dale Project with Dick West and Bill Miller. The author is deeply indebted to Don Voss for friendship and his assistance in reviewing this paper. Much appreciation goes to botanist Stefan Lura for his careful review of this paper, as well. The author would also like to express sincere gratitude to the following people for their assistance and support of the azalea collections over the years: Ron Springwater, Lynne Fitzhugh, Kathryn Powers, Ted Munter, Sam Schwartz, Harold Belcher, Gabrielle Scott, Marshall Miller, Allen MacDonald, Dan Krabill, and Frank Daspit, for volunteering their talents and time in the garden; and to Donald Hyatt and Steve Henning of the American Rhododendron Society and the Azalea Society of America for their fondness for the Glenn Dale azaleas at the National Arboretum. And finally, special thanks goes to the Friends of the National Arboretum for their ongoing and consistent support of legacy collections at the USNA.



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