JOURNAL

American Rhododendron Society

Vol. 72 Number 1 Winter 2018

Rhododendron foliage
page 28

American Rhododendron Society
A GUIDE TO THE SOCIETY

President: Ann Mangels
Past President: Bob MacIntyre
Western Vice President: Ken Webb
Eastern Vice President: Steve Krebs
Treasurer: David Banks
Secretary: Linda Derkach
Office Administrator: Katherine Sterner

Journal Editor: Glen Jamieson Ph.D.
Associate Editor: Sonja Nelson
Webmaster: Bob Weissman
Journal Technical Reviewers: Kenneth N. E. Cox, Harold E. Greer, Steve Hootman, Stephen Krebs Ph.D., G. David Lewis Ph.D., Erik T. Nilsen Ph.D., Registrar Michael Martin Mills, Bob Ramik, Mark Widrlechner Ph.D.

ARS Districts & Chapters

District Director Terms, starting in spring of years:
2018: District 5, District 8, District 9
2019: District 1, District 2, District 7, District 10
2020: District 3, District 4, District 6, District 11, District 12

Districts, District Directors, Chapter Chairpersons
DISTRICT 1
District Director: Chris Hodgson
Alternate: Chris Southwick
COWICHAN VALLEY CHAPTER - Barrie Agar
FRASER SOUTH CHAPTER - Evelyn Jensen
MT. ARROWSMITH CHAPTER - Glen Jamieson
NANAIMO CHAPTER - Allen McRae
NORTH ISLAND CHAPTER - Judith Murakami
VANCOUVER CHAPTER - Chris Hodgson
VICTORIA CHAPTER - Lois Blackmore
DISTRICT 2
District Director: Richard Fairfield
Alternate: Doug Keough
CASCADE CHAPTER - Dianna Davis
PILCHUCK CHAPTER - Doug Keough
SEATTLE CHAPTER - Chip Muller and Jeanine Smith
WHIDBEY ISLAND CHAPTER - Don Lee
DISTRICT 3
District Director: Richard Fairfield
Alternate: vacant
JUAN DE FUCA CHAPTER - Rosalie Preble
KITSAP CHAPTER - Kathleen Bullivant
OLYMPIA CHAPTER - Jack Horn
OLYMPIC PENINSULA CHAPTER - Billie Fitch
PENINSULA CHAPTER - Steve Johnson
SHELTON CHAPTER - Tom Noreen
TACOMA CHAPTER - Walt Brooks
DISTRICT 4
District Director: Brenda Ziegler
Alternate: Anne Gross
EUGENE CHAPTER - Terry Henderson
PORTLAND CHAPTER - Dennis O'Malley
SIUSLAW CHAPTER - Mike Bones
SOUTHWESTERN OREGON CHAPTER - Candy Baumer
TUALATIN VALLEY CHAPTER - Kay Nakao
WILLAMETTE CHAPTER - Wallace Reed
DISTRICT 5
District Director: Tim Walsh
Alternate: Richard Jones
CALIFORNIA CHAPTER - Paul Anderson
DE ANZA CHAPTER - Bee Brown
EUREKA CHAPTER - Max Abrahamsen
HAWAII CHAPTER - Sherla Bertelmann
MONTEREY BAY CHAPTER - Jerry Harris
NOYO CHAPTER - Dennis McKiver
SOUTHERN CALIFORNIA CHAPTER - George Klump
DISTRICT 6
District Director: C.J. Patterson
Alternate: Barbara Gingras
CONNECTICUT CHAPTER - Tom Flanigan
MASSACHUSETTS CHAPTER - Joe Bruso
DISTRICT 7
District Director: Robert Warren
Alternate: vacant
NEW YORK CHAPTER - James Fry
PRINCETON CHAPTER - Lester Martin
TAPPAN ZEE CHAPTER - Gus Cerini
DISTRICT 8
District Director: Steve Henning
Alternate: Linda Hartnett
GREATER PHILADELPHIA CHAPTER - Craig Conover
LEHIGH VALLEY CHAPTER - Victoria Buckley
SUSQUEHANNA VALLEY CHAPTER - Dr. Lewis Brown
VALLEY FORGE CHAPTER - Jerry O'Dell
DISTRICT 9
District Director: Bill Meyers
Alternate: Richard Mohr
MASON DIXON CHAPTER - Sonny Cable
MIDDLE ATLANTIC CHAPTER - Jeanne Hammer
POTOMAC VALLEY CHAPTER - Ginny Mohr
DISTRICT 10
District Director: Hale Booth
Alternate: Jackson McCarter
AZALEA CHAPTER - Charles Andrews
SOUTHEASTERN CHAPTER - Ray Head
TENNESSEE VALLEY CHAPTER - Leslie Dulin
WILLIAM BARTRAM CHAPTER - Glenn O'Sheal
DISTRICT 11
District Director: John Golab
Alternate: vacant
ANN ARBOR CHAPTER - Jan Grichor
GREAT LAKES CHAPTER - Eric Oesterling
MIDWEST CHAPTER - Susan Garland
OZARK CHAPTER - Robert Stassen
DISTRICT 12
THE RHODODENDRON SOCIETY OF CANADA
District Director: John Brett
Alternate: Bob Howard
RSC ATLANTIC REGION CHAPTER - John Brett
RSC NIAGARA REGION CHAPTER - Sondra Meis
RSC TORONTO REGION CHAPTER - Laura Grant
CHAPTERS AT LARGE
Director: Paul Anderson, M.D.
Alternate: Carl Adam Lehmann
DANISH CHAPTER - Jens Holger Hansen
DUTCH CHAPTER - Henk Borsje
FINNISH CHAPTER - Kristian Theqvist
J. D. HOOKER CHAPTER - Sri Keshab C. Pradhan
SCOTTISH CHAPTER - John Hammond
SWEDISH CHAPTER - Olof Norrlow
NON CHAPTER MEMBERS - Contact Office Administrator

ARS Committees and Chairpersons

Archives: Sandra McDonald, Ph.D.
Azalea: James Fry
Budget & Finance: Dave Banks
Bylaws & Policies: Bruce Feller
Digital Publications: Bob Weissman
Editorial: Sandra McDonald, Ph.D.
Electronic Media: Bob Weissman
Electronic Newsletter: Dave Banks
Endowment: Bill Mangels
Fundraising: Don Smart
Honors: Dee Daneri
Long-range Planning: Paul Anderson, M.D.
Membership: June Walsh
Nominations: Bob MacIntyre
Plant Awards: Linda Derkach
Program Library: Linda & Marvin Fisher & Donald Hyatt
Public Education: Harold Greer
Registrar of Plant Names: Michael Martin Mills
Research Committee: Harold Sweetman, Ph.D.
Research Foundation: Karel Bernady
Research Foundation Treasurer: Perc Moser
Seed Exchange: Norman Beaudry
Shows & Judging: Bruce & Marianne Feller
Speakers Bureau: Don Smart
Test & Display Gardens: Nicholas Yarmoshuk

Society's Purpose

To encourage interest in and to disseminate knowledge about rhododendrons and azaleas. To provide a medium through which all persons interested in rhododendrons and azaleas may communicate and cooperate with others through education, meetings, publications, scientific studies, research, conservation and other similar activities.

Membership Benefits

- Chapter affiliation with scheduled meetings
- *Journal American Rhododendron Society* published quarterly
- Annual convention and regional conferences
- Seed exchange
- Listing of registration of names and descriptions of new rhododendron hybrids published in the Journal

To Join the Society

Membership categories:
(January 1 – December 31)

Student (include proof if over 18)	$10.00
Regular	$40.00
Commercial	$90.00
Sustaining	$75.00
Sponsoring	$150.00
Life single	$1,000.00
Life family	$1,500.00

You can join the ARS through your local ARS chapter (check the website www.rhododendron.org for chapter contact info) or by sending a check or money order directly to the Office Administrator of the American Rhododendron Society at the above address. Checks must be in US funds. Make checks payable to the "American Rhododendron Society." Membership includes one year (4 issues) of the *Journal American Rhododendron Society* and affiliation with the chapter of your choice.**To receive the winter issue of the Journal, renewals must be postmarked no later than Dec. 1.**



CONTENTS WINTER 2018

Features

WINTER 2018 VOLUME 72 NUMBER 1
Journal American Rhododendron Society (ISSN: 0745-7839) Copyright © 2018 by the American Rhododendron Society. Published quarterly Jan. 15, April 15, July 15, Oct. 15 by the American Rhododendron Society. Periodicals postage paid at Mount Vernon, WA, and additional mailing offices.

CONTENTS WINTER 2018 continued

Society News

Publications

Cover Photo

Rhododendron foliage. Photo by Kenneth Cox.

ARS Digital Resources

Website: www.rhododendron.org

Office: www.arsoffice.org

***JARS* online:** www.arsoffice.org/protect/login.asp

***JARS* back issues**: http://scholar.lib.vt.edu/ejournals/JARS [to Vol. 61]

Archives: www.lib.virginia.edu/small

ARSStore: www.ARSStore.org

Blog: www.rhododendron.org/blog/default.asp

Plant Name Registration: www.rhododendron.org/plantregistry.htm

Rhododendron & Azalea News: www.rhododendron.org/news/newsindex.htm

From the President

Ann Mangels
Baltimore, Maryland

Today is Halloween! No trick or treaters have come to the door yet, but we're prepared with our peanut butter cups. Our granddaughter is going to be a sorceress, and two great granddaughters are Disney characters. This is a very important day in the year for them! I like it too, because we might begin to feel fall in its glory, and know that the recently planted spring bulbs will be some of the next things to rise in the garden. The trees are just starting to turn colors, leaves are beginning to fall down, and the last grass cutting has just occurred, all the things you expect at this time of year!

Our fall ARS meeting in Richmond, VA, was a great success. The excellent speakers covered many different aspects of rhododendron/azalea interests, from grafting; The National Arboretum, and particularly the azalea collection; native plants; gardens; updates on upcoming meetings; etc. It was a very nice time for us and the Middle Atlantic Chapter (MAC) did a fine job in planning our time and even arranging for the beautiful weather. There was an auction before the banquet at which an azalea 'Theodore S. Stecki', written about in the summer JARS and named after a former president of the ARS, was available.

At the Board of Directors meeting on Friday, the numerical restriction on Gold and Silver medals to be awarded was waived for 2018. It was felt that with the meeting in Germany, there may be more proposals for acknowledging those persons who richly have earned those honors, and it was felt this would be a great time to honor them. It was also decided to combine Districts 2 and 3 into one, with Richard Fairfield as District Director. We also discussed interest by the Australian Rhododendron Society in possibly becoming a chapter of the ARS; the dissolution of the Tappan Zee chapter; the committee work on selecting Sonja Nelson's replacement as JARS Associate Editor; and we made the decision, for monetary reasons, not to support Ken Cox's new book on woodland gardens. We were very happy to know that June Walsh will be the new membership chair of the ARS, and hopefully she and Paul Anderson can foster the Australian interest as a new chapter. We also learned that the Société des rhododendrons du Québec, the Niagara ARS Chapter and the Montreal Botanical Garden may collectively be interested in hosting a future ARS event.

On another topic, one of the Society's needs is a pro-bono attorney who can help with the reading of contracts, answer questions pertaining to policies and by-laws, and answer other queries that may crop up occasionally. It's difficult to state how much time would be needed, but mainly another set of eyes and ears to help when called upon. To date, Gordon Wylie and Jeff Cheyne have been our "go to" attorneys for many years.

I'm sure you are aware of the forthcoming German International ARS meeting and tours in May. There are so many opportunities for us as members to see fantastic gardens, nurseries, and meet interesting people from all over the globe. It's an event devised and planned from many aspects by Ken Webb, Steve Henning, Dave Banks, and others within our organization, as well as those from the different countries where both pre- and post-convention tours will be offered. Next fall there will be a board meeting in Chattanooga, TN, where we will again join together in North America with friends and enjoy the rich country and pretty mountain areas nearby.

Hope to see you soon!

From the Editor

Glen Jamieson
Parksville, BC
Canada

It is with mixed emotions that I write this column, as this will be the last time I will be producing a JARS issue with Sonja Nelson as my associate editor. She has given notice that she will be retiring as of February 28, 2018, so she will help get the Spring 2018 issue underway and then work with a newly appointed associate editor to make the transition as smooth as possible.

It has been a real pleasure to work over the last nine years with Sonja! She is a great asset to the ARS, and has an amazing knowledge of how the society operates. For a number of decades, she alone fulfilled the position of both editor and associate editor of JARS, and when I took over as editor in 2009, she continued on as associate editor, being responsible for developing the issue layout, interacting with the printer, and handling all advertising. In the last year, she has also taken on some of the roles that Laura Grant fulfilled as the ARS Executive Director.

Sonja is a remarkable person to work with, as she is very competent, has great ideas and suggestions as to how each issue should look, and works well under pressure to meet deadlines. I have found her a joy to work with, as she has a great sense of humour, is modest, knows a lot about technology and computer software, and most importantly to me, has been very supportive. I consider her a real friend, and have been honoured to have had the opportunity to work with her for so many years. Her replacement will have big shoes to fill!

I know that some ARS members have been somewhat disturbed about the number of European garden articles in recent JARS issues, so here is an explanation. There are five European ARS chapters, and with the 2018 ARS Spring Convention in Europe, these chapters wanted to showcase rhododendron gardens in their countries. This has been done in the past for gardens in areas around all American conventions, so it was only fair that this opportunity also be presented to our international chapters as well. I understand that many ARS members may not have the opportunity to attend the forthcoming European convention, but at least because of the recent JARS articles, you will now have some understanding of the high level of interest in gardening In Europe, and in rhododendrons in particular.

My Favourite Dwarf Rhododendrons

Chris Southwick
Nanaimo, BC,
Canada

Photos by the author
except where noted

When asked to write an article about my three favourite dwarf rhododendrons, I thought that it would be a relatively easy task. Now that I'm actually putting fingers to the keyboard to produce the article, I find it to be a rather difficult assignment. There are so many interesting ones, particularly the dwarf species, and then there are those that are easy to grow and those that are more challenging. Another consideration is regarding those that are easy to find in local nurseries versus those that are only available from specialty nurseries. So, I'll cheat a little and tackle the subject of rhododendron dwarves in two parts, starting with three dwarf hybrids and then three dwarf species rhododendrons.

First of all, what is a dwarf? Technically, they are supposed to be below 1.5 m (5 feet) in height on average after ten years, according to my source, Peter Cox's (1985) second book on small rhododendrons. He separates them into three categories after 10 years growth: low = 1 – 1.5 m (3-5 ft), semi-dwarf = 50 cm – 1 m (1.5-3 ft.) and dwarf = below 50 cm (1.5 ft).

Obviously my choice of favourites is strictly subjective and restricted to those plants that I currently grow. The reason for my choice of these particular plants is that they are easy care, are truly compact, are nicely shaped plants, and with their small leaves, can be grown in the more sunny parts of my garden. They also don't require pruning, are pretty well disease free and are floriferous. In addition, the hybrid plants that I have selected here are all very easy to find in our local nurseries.

Two of the top plants that come to mind are hybrids from a former Washington State hybridizer, Warren Berg. He travelled the globe seeking rhododendrons in the wild and was familiar with the amazing variety of dwarf species. He, along with the Cox family from Scotland, has been in my opinion one of the most successful at hybridizing and promoting dwarf rhododendrons for small gardens. I have chosen two of his hybrids,

'Ginny Gee' close-up of flowers.

first 'Ginny Gee' and second 'Patty Bee'.

'Ginny Gee' (*R. keiskei* 'Yaku Fairy' × *R. racemosum*) is described as white flushed pink and was introduced in 1979. It is incredibly compact and free-flowering. On my mother's sunny and windy deck, it sometimes completely covers itself with flowers so that you cannot see any of its foliage. It is absolutely amazing to see how tough this little plant is despite the hot sun and westerly winds on that very open deck in the downtown Nanaimo harbour. In my more sheltered site, it has grown wider and a little taller in the same amount of time. Another excellent quality is that it is not only drought tolerant but is also cold tolerant, and its foliage turns a bronze colour in the winter. It is considered a semi-dwarf.

'Ginny Gee' plant form.

The two rhododendron species parents of 'Ginny Gee' are quite different in stature and colour. *R. kieskei* 'Yaku Fairy' flowers are a pale yellow and the plant is very small in stature, with a ground-hugging, creeping habit. In my garden it has very small, light-green pointed leaves. *R. racemosum* is a more upright plant, and in my garden, has

interesting reddish stems and a pink-flushed white flower. Its leaves are dark green with a slightly rounded shape. I'm sure that Warren admired both of these species and rightly guessed that he'd have a winner if he was successful in combining the two. 'Ginny Gee' won an ARS Superior Plant Award in 1985.

'Patty Bee'. Photo courtesy of the Hachmann Nursery.

'Patty Bee' (*R. keiskei* 'Yaku Fairy' × *R. fletcherianum*) is another Warren Berg hybrid that is also very easily obtained from most reputable nurseries. 'Patty Bee' is a dependable soft yellow with very large flowers for the size of the plant. It is also easily grown, floriferous, and compact in shape and size, and in my experience, a care free plant. Its parent *R. fletcherianum* is an interesting species as it has beautiful bristles on the margins of its leaves. *R. fletcherianum* flowers are large and open-faced and 'Patty Bee' gets its wavy flower margins from this parent. 'Patty Bee' takes after its *R. keiskei* parent in its small stature. 'Patty Bee' won the ARS Award of Excellence (1984), Royal Horticultural Society (RHS) Award of Garden Merit (1989), and the Northwest ARS Superior Plant Award (1985). It is considered a true low dwarf.

'Patty Bee' close-up of flowers.

As you can imagine, I found it very difficult to choose just three plants. There are also many excellent white as well as lavender plants, including many hybridized by the Cox family in Scotland. Here in the northwest of North America, some of my favourite

'Scarlet Wonder'.

R. forrestii Repens Group. Photo by Jens Birck.

Cox dwarf hybrids are not as commonly available to us.

I ended up choosing as my third favourite a lovely red named 'Scarlet Wonder' ('Essex Scarlet' × *R. forrestii* subsp. *forrestii* Repens Group). 'Scarlet Wonder' was hybridized in Germany by Dietrich Hobbie prior to 1960. One of 'Scarlet Wonder's parents, 'Essex Scarlet', was introduced in 1899 and its parents are unknown. The other parent is one of my favourite dwarf species *R. forrestii* subsp. *forrestii* Repens Group. Both the leaves and flowers of 'Scarlet Wonder' are consistently of high quality. I like the rounded, puckered dark green foliage and the clear bright red flowers. It takes its cue in stature from *R. forrestii* as it generally will only attain a height of 60 cm (two feet) in ten years time. Like the two previous plants, 'Scarlet Wonder' is also a multiple award winner, having won the RHS Award of Garden Merit (1960), Gold Medal (Boskoop, Netherlands 1961) and the Highest Commendation in England in 1970.

All three plants, 'Ginny Gee', 'Patty Bee', and 'Scarlet Wonder' have been available in the Pacific Northwest for many years and, in fact, can be found even in grocery stores in the spring. Although they are commonly found, they are all exceptional plants that are well worth growing in almost any garden.

Choosing three dwarf hybrids was a challenge, but choosing three dwarf species proved to be even more difficult since I've become a species "nut."

The topic of hybrid versus species rhododendrons could be a topic in itself, as species rhododendrons in general are fascinating for their size, texture, shape, hardiness, adaptability, and the colours of their leaves, stems and flowers. They have been classified by some as "collector's" plants, and their very distinctive gestalt or overall look can enable a more experienced gardener to know which species a certain plant is even without having seen their flowers.

R. forrestii subsp. *forrestii* at the Rhododendron Species Botanical Garden. Photo by Hank Helm.

R. campylogynum. Photo by Hank Helm.

Once again, I am also limiting my selection to plants that are reasonably available and to those that I currently grow. Fortunately for those of us who live in northwestern North America, we have access to a number of specialist nurseries and botanical gardens that sell species rhododendrons. Most species, however, cannot be purchased at local nurseries or garden centres. If you're interested in purchasing collector plants, some species can be found in the spring at our local ARS chapters' annual plant sales.

R. campylogynum is easily one of my favourite dwarf species due to its compact and mounding form, its consistently healthy and glossy green leaves and its

'Egret'.

interesting long flower stalks that hold nodding bell-shaped and pale rose purple, salmon-pink, carmine, or deep purple flowers. According to the experts, this species has a number of forms including a very tiny-leaved form called *R. campylogynum* Myrtilloides Group. In the last few years, this species has been more available in the nursery trade, likely because it's fairly easy to propagate. The Cox family has used this species in their hybridizing to create (amongst others) the exquisite pure white hybrid 'Egret', which I wish was more readily available in local nurseries. The Bodnant form (Windsor) won an RHS Award of Merit (AM) in 1971.

I love blue-green leaves. Near the top of my list of dwarf species is a beautiful dwarf named *R. lepidostylum*. It has luscious foliage that cups raindrops in the leaf axils, as the leaf petioles are very short, and has very prominent hairs along its leaf margins. It is both compact and wider than tall and according to the ARS website, grows to become 60 cm (two feet) tall in ten years. It is cold hardy and has noticeable scales on the underside of the leaves, and hence its name. Mine has not yet flowered but the flowers are yellow and sometimes spotted orange. Its native geographical origin is southwest Yunnan in China. This photo of *R. lepidostylum* foliage was found on the Chimacum Woods website and shows its distinct habit of collecting water on its leaves, similar to lady's mantle (*Alchemilla mollis*) after a rain! I believe *R. lepidostylum* also challenges the much larger *R. campanulatum* subsp. *aeruginosum* for the glaucous cast of its new growth. *R. lepidostylum* won an RHS AM in 1969. Beautiful!

Saving the best for last is an exquisite plant named *R. forestii.* It has several named forms, the Repens Group and the Tumescens Group (mound-forming) (McQuire

and Robinson 2009). The former is a sweet little creeping or ground-hugging plant which was a favourite of my paternal grandfather, Ted Greig. He used to grow it in a stone trough perched on top of a stone wall at their Royston, BC, nursery years ago.

The photo of *R. forrestii* Repens Group by Jens Birck from the Hirsutum website is very reminiscent of the plant in my grandfather's Royston garden.

R. lepidostylum flowers.

R. lepidostylum. Photo by Bob Zimmerman.

R. forrestii can be very shy flowering, and needs very specific siting and planting conditions. In its native habitat high in the mountains of Tibet, Burma and China, you can imagine that it could withstand a blanket of ice and snow, high winds or driving rain. It is shy to flower in my garden, where I have it planted in two very different spots to try and get it right. It is a little fussy requiring excellent drainage, an open aspect, yet decent water. Alleyne Cook (1983) recommended planting it on clay covered with gravel. Since it is such an early bloomer, the flowers can get nipped by frost, so protection with a cloche or Remay cloth is recommended to protect the flower buds if planted in an area with spring frosts.

R. forrestii has been a prolific parent over the years. Many famous and worthy hybrids such as 'Carmen', 'Elizabeth', 'Riplet', 'Scarlet Wonder', 'Little Ben', 'Ethel', 'Lori Eischelser', 'Kimbeth' and 'Royston Red' all have some of its exceptional qualities.

'Carmen'. Photo by Susan Lightburn.

If you're interested in more historical and scholarly information about *R. forresttii,* read the Cook (1983) article which aptly describes the culture needs of this very interesting rhododendron.Dwarf rhododendrons are perfect for all types of gardens from decks full of pots to rock gardens to swathes of plants in large acreages. Most of my gardening friends these days have chosen a property that is appropriate for smaller plants. That makes truly dwarf rhododendrons, whether they're species or hybrids, an excellent choice of rhododendron.

References

McQuire, J.F.J. and M.L.A. Robinson. 2009. *Pocket Guide to Rhododendron Species*. 692 pp.

Cook, A.R. 1983. Some notes on *Rhododendron forrestii* and *R. chamaethomsonii. J. American Rhodo. Soc.* 37: 131-133. http://scholar.lib.vt.edu/ejournals/JARS/v37n3/v37n3-cook.htm

Cox, P.A. 1985. *The Smaller Rhododendrons.* Batsford: 271 pp.

Chris Southwick is the past president of the Nanaimo Chapter and the ARS District 1 Alternate Director.

The Origins of Publicly Accessible Rhododendron Gardens on Vancouver Island, British Columbia

Ian E. Efford
Duncan, BC,
Canada

After I wrote "The Public Rhododendron Gardens of Vancouver Island" (Efford *et al.* 2015) I began to ask myself why this modest-sized, west coast Canadian island (32,134 km^2 (12,407 mile^2) in area) with a relatively small population (760,000 people) would have over 20 large rhododendron gardens open to the public. This article examines the origin of these gardens and make comparisons between their roles and uses.

Pioneers

The rhododendron collections in nine of the gardens on the Island, as well as five in Vancouver, can be traced to the influence of three pioneer groups of rhododendron enthusiasts: 1) George Fraser, 2) Susan and Richard N. Stoker along with Buchanan and Jeanne Simpson, and 3) Mary and Ted Greig.

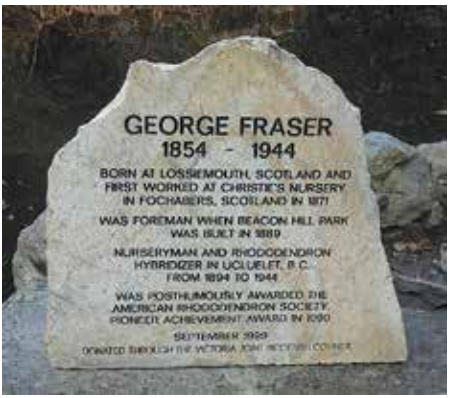
1) George Fraser

The Scotsman George Fraser was an experienced horticulturist when he arrived in Victoria, BC, in 1885. Another Scot, John Blair, a landscape architect who acquired the contract from the City of Victoria in 1889 to design Beacon Hill Park, chose George to oversee the implementation of his design. George was the first influential rhododendron enthusiast in the province. He was trained at the Royal Botanic Garden, Edinburgh, which was then, and still is, a world centre for rhododendron studies. One of the early plantings in the park was a row of rhododendron 'Cynthia', which is still standing after well over 100 years. Other rhododendron plantings followed. Layritz Nursery, at that time the only large nursery in British Columbia, imported woody plants, including rhododendrons, particularly from nurseries in the Philadelphia area. The fact

'Cynthia' in Ladysmith, BC. Photo by Tom Trott.

that these rhododendrons became conspicuous in the area around the Provincial legislature building, very close to Beacon Hill Park, meant that influential people saw them and planted them in local gardens. The well-known 'Cynthia' in Ladysmith, BC, about 90 km (56 miles) north of Victoria, was planted at about the same time as the new coal mining town was being developed. This town's main land connection on the island was by the Esquimalt and Nanaimo Railway that linked directly with Victoria. It is interesting that one of our first premiers was James Dunsmuir, who not only owned both the coal mining company that established Ladysmith and the railway but he also owned Hatley Park in Victoria, now

George Fraser. Photo courtesy of Ucluelet Municipal Archives.



Plaque in Beacon Hill Park commemorating George Fraser. Photo by Bill McMillan.

the grounds of Royal Roads University, with its well-known rhododendron collection.

After working in Victoria, George Fraser decided to establish himself as a nurseryman, something he had tried to do in Winnipeg, Manitoba, before moving to British Columbia (BC). In 1894 he moved from Victoria to Ucluelet, a tiny fishing village on the west coast of Vancouver Island, which was very isolated and connected only by boat with other places on the island. He purchased over 81 ha (200 acres) of land in what is now the middle of the township. All the plants or seeds that he obtained and all the plants he sold for the rest of his life came and left by a mail ship that ran from Victoria along the Pacific coast of Vancouver Island. Despite this isolation, he maintained an extensive correspondence with experts around the world, with whom he exchanged seeds and sold plants, especially his own hybrids.

The only rhododendron garden he was directly involved with was Beacon Hill Park, and for that, he is recognized in the park with a plaque and a garden bed of his rhododendron hybrids. He is also recognized in Ucluelet itself by various small public rhododendron gardens around the village. The one at the entrance to the village was spearheaded by Bill Dale and is devoted to Fraser's hybrids. There are also many rhododendrons planted along the approach road to the village in recognition of the pioneering rhododendron horticulture role George Fraser played. These plants were donated by members of three of the five ARS rhododendron clubs on the island, namely the Mount Arrowsmith, Nanaimo and Victoria Rhododendron Societies.

Ken Gibson and 'Peter Faulk'. Photo by Ian E. Efford.

For interested individuals who drive all the way across the island to the west coast, the main rhododendron attraction has been Ken Gibson's extensive collection of rhododendrons on a small hill right in the middle of Tofino. Although this garden is very close to George Fraser's old home, there is only a tenuous connection between the two. After George Fraser's death, his property was sold and when it was being cleared, Ken Gibson collected an abandoned *R. ponticum* from the site and transplanted it to the hill

in Tofino he had just cleared of trees to build his house. It grew well and from then on, Ken devoted much of his life to collecting, growing and promoting elepidote rhododendrons, for which he and his wife Dot were awarded an ARS Silver Medal in 1997. His enthusiasm and the ideal, warm moist climate of the Canadian North Pacific coast has resulted in one of the most extensive collections of species and hybrids on the continent. It is hoped that his extensive rhododendron collection will endure.

Almost within sight of the Gibson property is Clayoquot (Stubb's) Island, which has a large collection of old rhododendrons. Their presence in this garden is not connected to George Fraser's nursery as most of these plants were planted by Jo Bridges and Betty Farmer who obtained them from later nurseries such as Green Thumb in Nanaimo and the Greig family in Royston (more about the Greigs follows). Other rhododendrons were gifts acquired along the way, including plants from Ken Gibson. Since 1990, the resident caretaker Chris Taylor and gardener Sharon Whelan have obtained rhododendrons from other sources on Vancouver Island, including members of rhododendron societies that visited bringing gifts. Recently, the Nature Conservancy of Canada (NCC) added most of the island to its conservation portfolio when its current owner Susan Bloom donated the wild portion of the property to be maintained as a nature reserve for perpetuity. The heritage garden area and its rhododendrons remain outside this reserve.

2) Susan and Richard N. Stoker and G. Buchanan and Jeanne S. Simpson

The symbiotic relationship between these two couples is quite extraordinary, as the ages of the two couples differed considerably. The Stokers, both keen naturalists, had spent many years in India, some of that time in Sikkim, which is a centre of native rhododendron distribution (see recent JARS articles by Jamieson (2016) and Sharp (2017)). The Simpsons, also keen naturalists, came from England, although Buchanan had also spent time with the British Indian Army. Both women were enthusiastic artists. The Stokers purchased a lot on the north side of Cowichan Lake, about 40 km (25 miles) west of Duncan, BC, and about 100 km (60 miles) by road northwest of Victoria, BC, where they planned to begin a nursery specializing in

Susan Stoker. Photo courtesy Mike and Barbara Stone Family Archives.

alpine plants. They moved there in 1903 and in 1912, the Simpsons also moved there, establishing their float house alongside the same property, and with the Stokers' encouragement, also began gardening. In 1924, they purchased additional land and began their nursery.

The Simpsons. Photo courtesy Kay Simpson Collection.

Both couples depended on seed obtained by mail from England, Scotland, the USA and India. This was the time of the great explorations for new plants in the Himalayas and seed was obtained either by subscription to expeditions or by sharing purchased seed among enthusiasts. There were also exchanges between this Cowichan Lake group and George Fraser in Ucluelet before he died in 1944. Much of the Stokers' stock was alpine plants collected in the mountains of Vancouver Island but rhododendrons became of particular interest to the Simpsons. The Simpsons initially purchased about 0.6 ha (1.5 acres) of the Stokers' land and in 1924, purchased more land, eventually owning 10.1 ha (25 acres) to the west of the Stokers' original lot 29.

In 1967, Jeanne Simpson donated the 10.1 ha property to the University of Victoria, where it is now a lake-side field research centre. Most of the larger plants were moved to Finnerty Gardens at the University but some of the Simpson's original plantings still remain in the forest on the property. More recently, some of the larger plants at Finnerty were transferred back to Lake Cowichan where they form the nucleus of the Lake Cowichan Memorial Rhododendron Garden, established to commemorate the pioneering work of both the Stokers and the Simpsons in the Lake Cowichan area.

3) Ted and Mary Greig

To start their nursery in Royston, BC, in 1934 the Greigs first purchased the Alpine Nursery of the Buchanan Simpsons at Cowichan Lake, owned at that time by Mrs. Stoker. Alpines interested them, rhododendrons didn't, and only George Buchanan Simpson's insistence "that they'll grow on you" made them include the rhododendrons. The move from Cowichan Lake to Royston, about 180 km (112 miles) up island, was a great chore as the road then was terrible and the plants were all in heavy clay pots which required boxing up to protect them for the journey. Rhododendron enthusiasts must feel grateful to Jim, the Greigs' then 14-year-old son, since he was the one who insisted on taking the rhododendrons along with the alpine plants. It turned out that despite a great effort on the part of the Greigs to keep the alpines alive, their Royston beach-side location and lack of cold winters resulted in a loss of this stock over the

Table 1. Gardens, mostly on Vancouver Island, directly influenced by the pioneer families.

George Fraser	Susan and Richard Stocker	Mary and Ted Greig
Beacon Hill Park	Jeanne S. Simpson Reserve	Filberg Park
Ucluelet Gardens	Finnerty Gardens	Milner Gardens and Woodland
	Lake Cowichan Memorial Rhododendron Garden	Finnerty Garden
		Playfair Park
		Queen Elizabeth Park *
		VanDusen Botanical Garden *
		Stanley Park *
		U.B.C. Botanic Garden *
		Rhododendron Species Botanic Garden **

* In Vancouver, BC
** In Washington State

years, even though Ted Greig continued his strong interest in alpines, especially those from local Vancouver Island mountains. On the other hand, the rhododendrons in the nursery flourished, and Mary Greig developed into a continental expert on the genus and became one of the early North American hybridizers. She was particularly interested in adding species to her collection, and obtained these from seed exchanges and plants sent to her from many locations. The couple subsequently received the Gold Medal from the ARS in 1966 for their pioneering work on cultivation and hybridizing rhododendrons.

In 1952 and 1953, the Greigs gave two large gifts of over 1000 plants to the University

Mary and Ted Greig, early '60s. Photo courtesy Greig Family Archives.

of British Columbia (UBC). Those plants formed the basis of the UBC Botanical Garden collection. They also made gifts of choice plants from their personal collection to the University of Victoria.

In 1965, Mary and Ted Greig decided that they could no longer maintain the nursery and decided to sell most of the rhododendrons as a single collection. This was purchased by the Vancouver Parks Board and, over many weeks, the bulk of the plants were transferred to Vancouver. Over the next two decades, plantings of these rhododendrons created the large rhododendron displays in Stanley Park, Queen Elizabeth Park and VanDusen Botanic Garden. Some species were also given to the newly formed Rhododendron Species Botanic Garden (RSBG) in Federal Way, Washington State, and again to the University of British Columbia Botanical Garden. Although these two gardens received plants from Mary Greig, she told Michael Walker, the founder of RSBG, about the expert propagation knowledge of Nick Weesjes and Evelyn Jacks at UBC, with the result that Evelyn Jacks, working from cuttings taken from European stock, propagated most of the early plants for the RSBG.

Although the transfer to Vancouver included most of the plants from the Greig's Royston Nursery, some of the remaining plants were given or sold to other locations on Vancouver Island, namely Filberg Park in Comox, Milner Gardens [now owned by Vancouver Island University] in Qualicum Beach, and to both Finnerty Gardens and Playfair Park in Victoria, BC.

In summary, these pioneers were the principal inspiration or the source of rhododendrons for at least eight of the existing public rhododendron gardens on Vancouver Island.

Rhododendron Gardens: Their Origins.

The rhododendron gardens on Vancouver Island all differ either in ownership, administration or the way they present their role to the public. They include parks and other gardens that have free access; commercial or non-profit gardens that require an access fee or donation; and privately-owned gardens with significant rhododendron collections where the owner may allow visits upon request. How these gardens originated differ, with the different general ways listed below. It should be noted, however, that the origins of some gardens span different groupings and so were hard to classify.

a. Private Gardens that have become public or non-profit rhododendron gardens

This group consists of quite a few beautiful parks and gardens, some of which charge an entrance fee or ask for a donation. Six public rhododendron gardens were originally gardens in homes of wealthy citizens. Hatley Castle's garden was started in 1908 by James Dunsmuir and is a classic example. Others include Abkhazi Garden, Butchart Gardens (it began as a quarry), Filberg Park, Milner Gardens, and Clayoquot Island. Included in this group might also be the Jeanne S. Simpson Resource Centre in Lake Cowichan and the Point Ellice House and Garden in Victoria.

Table 2. Features of Existing Public Rhododendron Gardens. 1. Private Gardens that have become public or non-profit; 2. Public Parks where the rhododendrons are from a private garden; 3. Public Parks or gardens that purchased rhododendrons; 4. Private gardens that are now commercial; 5. Private gardens that allow controlled access.

Parks and Open Gardens		
Beacon Hill Park, Victoria	3	Plants purchased by the City of Victoria.
Bowen Park, Nanaimo	2	Plants donated from the garden of Mrs. Ellen Hailey.
Filberg Park, Comox	1	Plants donated from Mary Greig's nursery and by the Gwen Wright in memory of Harry Wright
Dominion Brook Park, Sidney	3	Plants purchased by the federal Agriculture Department
Ucluelet Gardens, Ucluelet	2	Plants donated by ARS chapter members on the island, coordinated by Bill Dale of the Victoria Chapter
Playfair Park, Victoria	2	Plants donated by members of the Victoria Rhododendron Society, Mary Greig, and the City of Seattle.
Comox Valley Rhododendron Garden, Courtenay	2	Established and planted by members of the North Island Rhododendron Society
Lake Cowichan Memorial Rhododendron Garden, Lake Cowichan	2	Rhododendrons were transferred from Finnerty Garden and additional plants donated by the Victoria and Cowichan Valley Rhododendron Society.
Finnerty Gardens, Victoria	2	Rhododendrons donated by Jeanne S. Simpson from her property on Cowichan Lake and additional plants from Mary Greig and from members of the Victoria Rhododendron Society.
Government House, Victoria	3	Plants purchased by the Government of Canada.
Commercial Gardens		
Butchart Gardens, Brentwood	4	Originally a private garden.
Kitty Colman Woodland Gardens, Comox	4	A private woodland garden.
Tofino Botanic Gardens, Tofino	4	Established as an independent educational centre
Non-profit gardens that have an entrance fee or donation		
Glendale Gardens and Woodlands, Victoria	2	Established as an independent educational centre. Most plants donated by members of the Victoria Rhododendron Society
Milner Gardens and Woodlands, Qualicum Beach	1	Originally, a private garden. Now owned by the Vancouver Island University. A new rhododendron species garden is being established with financial support from the ARS chapters on the island and donated plants.
Abkhazi Garden, Victoria	1	Originally a private garden.
Point Ellice House and Garden, Victoria	1	A private garden.
Hatley Park, Colwood	1	Originally a private garden.
Jeanne S, Simpson Resource Centre, Lake Cowichan	1	Originally a private garden.

Table 2 continued

Private Rhododendron Gardens accessible with the owner's permission		
Ronning Garden, Holberg	5	Established around 1900. Unkempt but interesting as *Araucaria* reproduce naturally in the mild, wet climate. Very isolated.
Towner Crest, Sidney	5	A private garden.
Smith Hill Garden, Courtenay	5	A private garden with a rhododendron small nursery.
Clayoquot Island, Tofino	5	A private garden.
Hidden Acres Rhododendron Garden and Nursery, Campbell River	5	A private rhododendron nursery and beautiful landscaped rhododendron garden.

NB: In repairing this summary, some generalizations were made, e.g. Filberg Park has other rhododendrons other than the two collections mentioned here.

b. Parks where the rhododendrons came from private gardens

This group includes some of the largest island rhododendron collections such as Finnerty Gardens in Victoria, Bowen Park in Nanaimo, Lake Cowichan Memorial Rhododendron Garden, Ucluelet Gardens, Comox Valley Rhododendron Garden in Courtenay, and Glendale Gardens and Woodlands in Saanich. Playfair Park, also in Victoria was created by members of the Victoria Rhododendron Society and Adam Szczawinski, Curator of Botany, at the BC Provincial Museum. It was the recipient of a large collections of azaleas from Seattle City Parks, but unfortunately almost all of them have been over time pilfered by local residents!

c. Government Gardens where the rhododendrons were purchased

Only three gardens have significant rhododendron collections that were purchased and planted by the government owner of the park. The gardens at Government House were developed by the Federal Government, Beacon Hill Park was created and planted by the City of Victoria and the federally-owned Dominion Brook Park in Sidney originated as part of the Department of Agriculture's experimental research station.

d. Private Gardens that are now commercial operations

This group includes Butchart Gardens in Saanich, Kitty Colman Woodland Gardens near Courtenay and the Tofino Botanic Garden.

e. Private Gardens with large rhododendron collections that allow visitors

Some of the outstanding and most diverse rhododendron gardens on the island remain in private hands where the owner may welcome visitors after visit requests are made. These include Towner Crest, the garden of Nick (now deceased) and Evelyn Weesjes (née Jack) (Evelyn was awarded the ARS Gold Medal in 1970 for her work on the genus); Bob and Adele Smith's garden Smith Hill, which has an outstanding collection of rhododendrons and also a small, non-profit rhododendron nursery; and Paul and Linda Wurz's Hidden Acres garden, whose rhododendron nursery is a

beautifully landscaped rhododendron garden. These gardens are owned by experts. They have very diverse collections of both species and hybrids and also have some of the best labelled plants.

f. Educational Centres

Glendale Gardens and Woodlands (also known as the Horticultural Centre of the Pacific) was created from scratch as an educational and display centre, and the Tofino Botanic Garden was the creation of George Patterson to advance "rainforest" gardening opportunities.

The common denominator in all these gardens is that more than 80% of them were either originally private gardens or had rhododendrons freely transferred to them from private gardens. There are only three gardens in which the owners, all governments, purchased the plants. Almost all these gardens continue to benefit from donations of rhododendrons from ARS members and the wider gardening community and many also benefit from volunteers who help with their maintenance.

Finnerty Gardens,'Princess Abkhazi'. Photo by Bill McMillan.

The Roles Played by Large Rhododendron Gardens

Rhododendron gardens play very different roles. There are private gardens of

Abkhazi Garden panorama, December 2014. Photo by Dennis Robinson.

Milner Gardens and Woodland. Photo by Shirley Efford.

enthusiasts, attractive and peaceful public parks, educational facilities associated with universities or colleges with extensive collections of species and hybrids, and even a display garden, i.e., the world-famous Butchart Gardens.

With respect to education, some are directly associated with the college training of future horticulturists. These include Hatley Park in Victoria for students from Camosun College and Milner Gardens and Woodlands in Qualicum Beach for students from Vancouver Island University. Glendale Gardens and Woodlands offers both a formal training programme in horticulture and courses for the general public, and the Tofino Botanic Gardens also offers courses to the general public. Some of these gardens are supported by a large number of volunteer gardeners, notably Government House, Glendale Gardens and Woodlands, and Milner Gardens and Woodlands, who gain training and experience from their work.

At this time, there are no courses exclusively focused on rhododendrons at any island gardens. Such programmes could contribute towards increasing the number of people enamoured by rhododendrons and who might become members of the ARS, but at the moment, such education is largely restricted to workshops organized as regional ARS events.

Accurate labelling is an essential component of any educational programme but is weak or absent in many island gardens. In some, this is intentional, as labelling, especially of alpine and rock garden plants, orchids, and of rarer rhododendrons has been found in some gardens to increase plant theft, although because of their often larger size, rhododendrons are generally less affected by theft. Table 3 provides a

Table 3. The extent of plant labelling in Vancouver Island public gardens. * = minimal; ** = modest; *** = information is available.

Rhododendron Gardens	Labelling	Additional information.
Beacon Hill Park, Victoria	*	Most rhododendrons are unlabelled, however, the collection of George Fraser hybrids are labelled.
Towner Crest, Saanich	***	All rhododendrons are labelled or well-known to Evelyn Weesjes.
Smith Hill Gardens, Victoria	***	All rhododendrons are labelled.
Glendale Gardens and Woodlands, Victoria	***	All rhododendrons are labelled. A computer print-out is available for all plants.
Bowen Park, Nanaimo	**	Some are labelled and an effort is underway to identify the rest.
Filberg Park, Comox	*	Maps are available of the planting of the Royston plants and the Harry Wright hybrids are all labelled. The other rhododendrons in the garden are unlabelled.
Dominion Brook Park, Sidney	*	Volunteers have been studying the detailed records and labelling the rhododendrons when possible.
Ucluelet Gardens, Ucluelet	*	George Fraser's hybrids are labelled.
Playfair Park, Victoria	*	The rhododendrons were all initially labelled but many labels are now lost.
Comox Valley Rhododendron Garden, Courtenay	***	Details maps are available at the site for all the rhododendrons in these gardens.
Lake Cowichan Memorial Rhododendron Garden, Lake Cowichan	***	All rhododendrons carry a numbered tag and maps of the planting can be obtained from the visitors' centre on the other side of the road.
University of Victoria – Finnerty Gardens, Victoria	*	Rhododendrons are numbered and some labelled. A computer print-out is available that lists all the plants.
Milner Gardens and Woodlands, Qualicum Beqch	*	A new rhododendron species garden being established will have detailed labelling for all rhododendrons.
Hidden Acres, Campbell River	***	All plants are labelled or well-known by Paul Wurz.

summary of present plant labelling practices in public gardens.

Government House. Photo courtesy Friends of Government House.

Summary

By their hard work and dedication to the genus *Rhododendron*, private gardeners have made a significant contribution to creating and beautifying the rhododendron gardens of Vancouver Island. Many of the public rhododendron collections were obtained from private gardens, and much ongoing garden maintenance is being undertaken by volunteers. Worthy of recognition are the activities by members of the five ARS chapters

on the island who continue to produce a wide range of species and hybrids from seeds or cuttings, which are widely distributed at little or no cost both to members and to private and public gardens throughout the island.

The overall result is that we have many beautiful sites in the island's towns and parks that are of aesthetic benefit to the residents and are a great attraction to tourists. Although Butchart Gardens, a world-renowned display garden, is the garden best known internationally, rhododendron enthusiasts are familiar with the more specialized public gardens such as Finnerty, Glendale Gardens and Milner Gardens and Woodlands. There are very few other plant genera that play such an important and diverse role in today's public gardens. Rhododendrons contribute to landscapes, personal gardening enjoyment, and the benefits of just sitting in a park and enjoying a colourful view. Even walking down the street and stopping to admire a flowering rhododendron in the front garden of an old house can stimulate discussion and contribute to one's enjoyment of life. We are all indebted to the dedicated gardeners whose rhododendron collections are now seen throughout the island.

Scene with Moon Bridge at Glendale Gardens and Woodlands. Photo by Bill McMillan.

Hatley Gardens at Royal Roads. Photo by Barrie Agar.

The Japanese Garden at Butchart Gardens in the spring. Photo courtesy Butchart Gardens, Ltd.

Ucluelet Quarry Garden. Photo by Wanda McIlroy.

Acknowledgements: I would like to acknowledge the advice I received from Chris Southwick and Bill McMillan in the preparation of this article.

References:

Efford, I.E., A. Campbell and S. Lightburn 2015. *The Public Rhododendron Gardens of Vancouver Island.* Ian E. Efford publisher: 1-121.

Jamieson, G. 2016. Exploring Sikkim : Rhodos and Plants of the Day. *J. American Rhodo. Soc.* 70, 2: 62-73.

Sharp, R. 2017. In Search of the Elusive Rhododendron Grove: A Botanical Trek in the Himalayas of Sikkim. *J. American Rhodo. Soc.* 71: 59-67.

Ian Efford is a member of the Cowichan Valley Chapter.

Hybridising Rhododendrons for Coloured Foliage at Glendoick

Kenneth Cox
Glendoick,
Scotland

Photos by the author

Rhododendrons are fine, but they are only interesting for two weeks in the Spring; the rest of the time they are just green.

Members of rhododendron societies such as the ARS will (hopefully!) know how good rhododendron and azalea foliage can be, but the view expressed above is a commonly held belief in gardening circles. From a commercial nursery point of view, foliage is what sells the plant for eleven months of the year. To that end, the Glendoick breeding program over the last 30 years has largely focussed on creating and selecting cultivars with coloured or narrow leaves. Glendoick are certainly not alone on this path; several other breeders including Warren Berg in the Pacific Northwest and Svend Hansen and Jens Birck in Denmark have crossed and selected cultivars for their foliage effect. One example is Warren Berg's use of *R. proteoides* as a parent. The results produced some fine foliage plants, but tended to be very slow growing and rather shy flowering, so remain mainly of interest to collectors. Jim Barlup and Frank Fujioka have used some of Warren's plants in further breeding. I have a largely commercial approach when selecting new hybrids to name, and new cultivars need to be robust and usually flower young and grow with vigour. My observation is that rhododendron and azalea breeders have long over-concentrated on flower colour and size and have often neglected habit and foliage quality. So many hybrids raised in North America have poor foliage quality, such as 'Pink Petticoats', 'Khubla Khan', 'Midnight Mystique', CIS, 'Paprika Spiced' and so on; the list is long! To me none of these are good enough to be named due to short-comings in foliage or habit. The ideal rhododendron has both fine flowers and excellent healthy deep green or coloured foliage. To create hybrids with more interesting foliage, it is helpful to examine them in several categories.

Rhododendron foliage of various colours.

Rhododendron coloured foliage including ‘Molten Gold’, ‘All Gold’ and ‘Viking Silver’.

For rhododendrons with silvery leaves, there are several desirable species with good characteristics. *R. degronianum* subsp. *yakushimanum* (yak), introduced from Japan in the 1930s, is the best known and most used parent for hybridising and many of its hybrids have silvery young growth. What we wanted was silvery growth all year round and the introduction of *R. pachysanthum* from Taiwan in the 1970s gave us another superb parent for foliage. Many made the cross between these two species. Some of the finest selections we obtained from Denmark, and one of these we named 'Viking Silver' (syn. 'Silver Dane'), while another selection was named 'Silvervelours' by Hachmann. The former has the best and most persistent silver leaf covering of any hybrid we have seen. Another fine selection is Warren Berg's 'Golfer' (yak × *R. pseudochrysanthum*), with white

'Golfer' with *Acer palmatum*.

R. proteoides.

'Viking Silver'.

'Indigo Steel'.

flowers, and silvery leaves for at least six months of the year, but it is a bit slow growing to make a great commercial plant. It is worth pointing out that in Europe these hybrids are usually grafted, as they don't root easily.

Several rhododendron species have glaucous/blue-grey or blue-green leaves. Amongst dwarf rhododendrons are 'Ramapo'; *R. fastigiatum*, including our selection 'Indigo

Steel'; and the yellow-flowered *R. lepidostylum* with its fine hairy, blue-green leaves. Larger growing is *R. oreotrephes* and we named two selections: 'Pentland', with the finest two-toned flowers, and 'Bluecalyptus' with pink purple flowers. Both have blue-grey leaves all summer and will reach two to three m (6.5-9.8 ft) in height after ten years. Shy-flowering but fine foliage plants include *R. pronum*, a very compact species which can takes up to 30 years to produce blooms, and the larger *R. campanulatum* subsp. *aeruginosum*, *R. sphaeroblastum* var. *wumengense* and *R. clementinae*. Needless to say, we made crosses between them, but the results were pleasing rather than spectacular so we did not name any. Some deciduous azaleas have fine glaucous leaves. 'Midsummer Mermaid', a late flowering pink scented hybrid raised by Ted Millais, probably an *R. arborescens* cross and not *R. viscosum* as it is registered, is a great plant, whatever its origins. Another is 'Baltic Amber' which we have in two colour forms, pale orange and yellow, with striking bluish young growth. We have also selected a form of *R. luteum* with glaucous leaves, which is yet to be named, and we also highly rate Steve Hootman's *R. benhallii* selection 'Honshu Blue' (formerly classified as a *Menziesia* but now considered a rhododendron) with glaucous leaves, good autumn colour and masses of tiny lavender-pink flowers in the spring.

'Bluecalyptus'.

R. benhallii (Menziesia) 'Honsu Blue'.

Many rhododendron species have red leaf undersides in young seedlings and this character disappears as the adult leaf size is reached. Occasionally a mutation

occurs which causes the plant to retain the red underside all year long. For example, Steve Hootman's *R. chamaethomsonii* 'Little Vixen' has this characteristic. Warren Berg and ourselves spotted the potential of 'Rosevallen', a curious and rather weak plant with early red flowers which is mainly grown for its persistent red leaf underside. We had low expectations that this mutation could be transmitted to the offspring but it turned out to be passed on to around 50% of seedlings. Warren crossed it with 'Rubicon' to produce a tall, fine red flowered but not all that hardy cultivar, which was named 'Whid Bee'. In the 1980s, we made a number of crosses of 'Rosevallon' and the best seedling, with masses of pink flowers and red-purple leaf undersides, was named 'Wine and Roses' ['pinros'] which has a plant patent in Europe and which has proved to be an excellent commercial plant for mild areas. Frank Fujioka crossed Warren's hybrid 'Whid Bee' with a *R. pachysanthum* hybrid to create 'Cherries and Merlot', which I personally have only seen in pictures. It is interesting how the red leaf underside has carried through two generations, so clearly this is not a recessive character. What we really wanted, though, was red on the upper leaf surface.

R. campanulatum subsp. *aeruginosum*.

R. sphaeroblastum var. *wumengense*.

'Wine and Roses'.

'Everred'.

'Moser's Maroon' is roughly a 100-year-old French hybrid of unknown parentage with dark red flowers and brightly coloured red-bronze young growth. It had been used by Lionel de Rothschild, Harold Greer and Halfdan Lem as a parent, but the offspring did not carry the red young leaves. Another potential parent was 'Lem's Red Elizabeth', syn. 'Elizabeth Red Foliage', and a third was 'Elizabeth Lockhart', an unstable purple leaved sport of 'Hummingbird' which was found in a Scottish garden. We set to work crossing and re-crossing these plants and produced a wide range of hybrids with dark leaves. Some of the darkest leaved seedlings had distorted corollas, as if the pigment had affected the formation of the flowers. Some even had purple roots. Out of all these we selected the compact 'Everred' ('851C' - Plant Breeders Rights (PBR) plant patent in Europe) which has dark red-purple leaves

on its upper and lower surface as well as the darkest red flowers which are produced rather spasmodically. The foliage remains red in Scottish conditions but further south it requires shade to remain purple. Not all that easy to propagate, attempts to tissue culture

R. tricanthum 'Glendoick Moonlight' flowers and foliage.

Blonda'. Hachmann Nursery.

it has tended to make it less stable in leaf colour. In the right conditions, it is a great plant and I saw lots of these plants on Vancouver Island, Canada, where it was given away as a table favour at an ARS convention. We have a new hybrid under testing that is more robust, vigorous and tougher, with full trusses of dark red flowers which I think may be even better. I also saw potential in breeding deciduous azaleas with coloured young growth, so used 'Fireball', 'Arabella' and 'Klondyke' to raise a set of yellow, orange and red selections with red and deep bronze young leaves. They are all slightly lacking in vigour so I did not name any of them, but they make great garden plants. In evergreen azaleas, 'Johanna' and its hybrid 'Marushka' have some of the best foliage I know, being a glossy, deep green in summer and dark red in winter. This immediately attracted me and I use these as parents to raise similar hybrids such as 'Glendoick Goblin' ['GLE010']. I think there is potential to select for best autumn colour amongst deciduous azaleas, but I'm not aware of any work on this yet.

'All Gold' flowers and foliage.

'All Gold', 'Ken Janeck', 'Everred', and 'Midsummer Mermaid'.

Large-leaved rhododendron species are wonderful plants for relatively mild sheltered woodland settings but they take many years to flower and need lots of space, as they can grow into 5 m x 5 m (18 ft x 18 ft) monsters over time. Several breeders in different parts of the world have worked on taking the large leaved species and creating hybrids of

New Zealand hybrid 'Red and Gold'.

Unnamed Glendoick hybrid, provisionally known as 'Red Graziella'.

them that are more compact and freer flowering. I first came across examples in New Zealand where several *R. macabeanum* hybrids, mainly crossed with 'Unique', were in commerce. Inspired by this, I made a similar cross between *R. macabeanum* and 'Percy Wiseman', creating a "mini-big leaf" with pale pink to cream flowers in April which we named 'Loch Awe'. It has reached around 2 m x 2 m (6.5 x 6.5 ft) after 20 years and the foliage is excellent. We like the foliage of Jim Barlup's 'Laramie' (*R. degronianim* subsp. *yakushimanum* × *R. macabeanum*) but its white flowers are a bit disappointing. I like 'Rexima' and 'Great Dane', both derived from *R. degronianim* subsp. *yakushimanu*m × *R. rex* and raised in Germany and Denmark respectively. In colder climates hybridisers such as Bruce Clyburn (2012) and John Weagle (Nova Scotia, Canada) have been crossing large-leaved species with *R. brachycarpum* and *R. catawbiense* hybrids to create hardier foliage plants.

I wrote about variegated rhododendrons in a previous ARS Journal article (Cox 2007) so I will not repeat this here. Many trees and shrubs produce sports with pale yellow leaves. Not all are sun-resistant and many are unstable but plants such as *Acer cappadocicum* 'Aureum', *Catalpa bignonioides* 'Aurea' and *Choisya ternata* 'Sundance' [= 'Lich'] are very popular commercial garden plants and help to light up a dark woodland

'Graziella'.

backdrop. There are very few rhododendrons with golden leaves and most of them burn badly in sunlight. We selected an amazing form of *R. tricanthum* named 'Glendoick Moonlight' with cream young growth, but it is suitable only for a very shade site, as any sun burns the growth off. Holger Hachman showed me a spectacular *R. williamsianum* hybrid named 'Blonda' with bright, orange-yellow young growth, but he said that it was not a good commercial plant. A variegated hybrid I obtained in New Zealand was named 'Red and Gold' after the red flowers and bold yellow leaf flashes, and this then produced a further sport with pure yellow leaves which I propagated to see if it was stable. To my surprise it seems to be, so I named it 'All Gold' and it is, as far as I know, the only rhododendron of its type. Not all that hardy, it is a plant only for climates like that in the UK or North American Pacific Northwest.

Narrow leaved rhododendrons have also always appealed to me and who can resist the foliage effect of *R. roxieanum* var. *oreonastes* or *R. makinoi.* The best-selling narrow-leaved hybrid is widely grown in Europe under the name 'Graziella'. Though it is claimed that it was selected in Germany by G. Eschrich, I am pretty certain that this is the same plant named 'Hampshire Belle' which was selected at the Hillier Arboretum

The garden of Svend Hansen.

in Hampshire, England. I believe that cuttings may have been taken to Holland or Germany and the plant renamed 'Graziella'. It is said to be a *R. ponticum* hybrid, but I'm not convinced of this, and it is an excellent commercial plant with masses of pink flowers and very narrow leaves. However, it is difficult to make crosses with as its pollen is sparse and it is not receptive to pollen from other plants. Maybe one in five crosses takes but we have had some fun with its offspring, the first named were Glendoick™ 'Sorbet' (GLE028] (pale pink) and Glendoick™ 'Sherbert' ['GLE029']](pale yellow). Holger Hachmann has another narrow leaved cultivar called 'Filigran' which is not as vigorous as 'Graziella' but which sets seed more readily. He has crossed it with dark purple hybrids and the results are spectacular.

You might be able to work out where this is going! If you can have narrow leaves and you can have red leaves, then is it possible to have narrow red leaves? We began crossing amongst the hybrids listed here and we now have a range of porcupine-like plants with red young growth, red undersides and so on. So far we have not found one that is quite vigorous enough to have commercial potential but in the garden, they are wonderful plants. Watch for more articles in this as I do think we're not far away with this quest.

Dane Svend Hansen's rock garden at Kærnehuset, Sweden, created with huge rocks and large Swedish peat blocks, is filled with an amazing display of rhododendrons, mainly selected for their foliage. Svend says that the flowers are a "distraction." Another excellent garden created in recent years is Jardin du Pellinec in Penvénan, western

'Bambi' X *R. proteoides* (Warren Berg cross) in Svend Hansen garden.

France, where rhododendrons with coloured young growth have been planted with grasses, *Heuchera, Pittosporum* and *Podophyllum* to produce a carpet of textures and colours that looks great for months and months. I find this approach to planting rhododendrons refreshing, mixed with all sorts of other plants, and choosing species and hybrids with as much year-round interest as possible. I hope that this article inspires more rhododendron breeders to look beyond the flowers, and I can certainly say that in moderate climates, the cultivars listed above make great garden plants.

Note: Glendoick is a registered trademark, so the rhododendron names which include the word 'Glendoick' are trade designations, i.e., the name used commercially. The cultivar reference names such as 'GLE03' are not used except for registration.

References

Clyburn, B. 2012. A Breeding Program for Zone 6 Big Leaf Rhododendrons. *J. American Rhodo. Soc.* 66: 159-162.

Cox, Kenneth. 2007. Variegated Leaved Rhododendrons & Azaleas. *J. American Rhodo. Soc.* 61: 3-7.

Kenneth Cox's new book Woodland Gardening, Landscaping with Rhododendrons, Magnolias and Camellias *will be published in 2018. Ken Cox is a member of the Scottish Chapter.*

An Unknown Lem Hybrid Discovered at his Ancestral Home in Norway

Per M. Jørgensen
Bergen, Norway

Halfdan Lem (1885-1969) is a well-known rhododendron pioneer in the USA. While his activities and achievements are well documented (Bell 1977, 1984, 1988; Nelson 2001), his background is less well known. During work on Norwegian rhododendron breeders (Jørgensen 2014), it was pointed out to me that I needed also to include Lem as he was born and grew up in Norway, and so a special study of his life and work proved necessary (Jørgensen and Larsen 2017). The most surprising result was that on a visit to his ancestral home of Maurstad, Nordfjord, in Norway, a large, unknown rhododendron was found, and it proved to have been planted by himself during his last visit to Norway shortly before 1960. I suggest that it is of some interest for North American rhodo-enthusiasts to get to know this part of his personality.

Lem's Family Background and Upbringing

Halfdan Lem was born in 1885 in Maurstad, Nordfjord, north of Bergen in western Norway. His father Arnoldus Lem (1847-1924) was bailiff of the region, and he belonged to an important family of Flemish origin, with many civil servants and military officers. His mother Anna Elisabeth (b. Paasche, 1858-1933, Fig. 1) came from a Bergen family with garden traditions. The remnants of the garden of her parents at "Karensfryd" in Bergen still exists. Halfdan later claimed that it was his mother's garden interest that triggered his own affection for garden plants. We otherwise know that he from his early youth enjoyed being out in the natural environment of his community, relishing to hunt and fish. His collection of bird eggs still remains in the attic of his ancestral home. He was one of twelve children educated at home by a governess, and he is not known to have any further formal education. In 1910 he moved from home to coastal Vågsberg where he was employed as an assistant in his family's fishing and trading operation. However, the next year he emigrated to the Pacific coast of North America.

Fig. 1. Halfdan's mother, Anna Elisabeth Lem, a keen gardener, from a photo from about 1880. This is a photograph he had on the wall in his home in Seattle. The original still hangs in his ancestral home in Maurstad. Privately owned.

Emigration and Settling in the USA

In the emigrant documentation, he is recorded as going to his brother Rolf (1890-1917) who had settled in Tacoma, Washington, with the intent to fish and hunt there to make a better living. He soon became involved in fisheries in his new country, and about 1920, he moved further north to Ketchikan, Alaska, where he became a partner in a fishing company. About that time he married (Fig. 2) another Norwegian emigree, Anna Øiestad (1895-1995), who had arrived in Idaho in 1917. She was a farmer's daughter and shared his interest in gardening. They developed a large garden around their home in Ketchikan where among other things, Halfdan bred delphiniums (Fig.

Fig. 2. The newly wedded couple, Anna and Halfdan Lem, from a photo he sent home to Norway. Privately owned.

Fig. 3. Anna in their Ketchikan garden, among Halfdan's delphiniums. Photographed by Halfdan and sent home to Norway. Privately owned.

Fig. 4. Lem's self-designed house in Aurora Drive, Seattle, from a photo he sent home to Norway. Privately owned.

3). He was an inventive, very enterprising man who did well in his profession, but nevertheless sold his part in the fishing company in 1934 and ultimately settled in the Seattle region (Fig. 4).

Rhododendron Breeding

According to himself, he became fascinated by rhododendrons after having been given a book about the genus by a friend around 1925. That book was most probably by Millais (1924). It is easy to understand why that triggered his fascination in the genus, as it told the story of the adventurous discovery of many species in the Himalayas and China, and showed the beauty of their flowering as well as how the English had produced many hybrids. In 1930 when he returned to Norway, he had to change ships in Southampton, where he somehow came in contact with Fred J. Rose (Fig. 5), the head-gardener for Lord Swaythling who

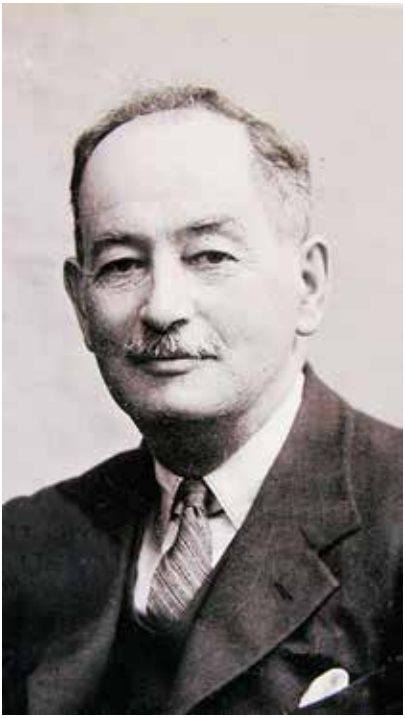


Fig. 5. Fred Rose as an elderly man. Courtesy of R. Wilkinson.

had a major rhododendron collection in his gardens at Townhill (Wilkinson 2004), where they bred new cultivars. How this contact was established is uncertain since no correspondence between them has been discovered. It is certain, however, that this meeting proved crucial for Lem's later decision to start a rhododendron nursery, a brave decision for someone who was close to 50 years of age. In Seattle, he established himself on Aurora Drive (Fig. 4) on a property that cost him $40,000, where he pioneered in the development of new rhododendron cultivars and had a nursery. He enjoyed serving his customers and essential for his success was the material that Fred Rose supplied to him. In 1939, Rose sent Lem a major collection of seeds from crosses he had made, and which he wanted to secure away from the spreading war in Europe. From one of these packets, recorded as 'Norman Gill ' × 'Jean Marie de Montague', five seedlings grew. One of them was selected and named 'Anna' (Fig. 6) after his wife. This plant Lem often used to produce spectacular new cultivars, the most famous of which is probably 'Lem's Cameo' (Fig. 7). This has been called by some "the Cadillac of the American Rhododendron industry." Another cross by Rose which Lem used was *R. lacteum* × 'Mary Swaythling', later in 1973 named 'Fred Rose' by the Sunningdale Nurseries (Fig. 8). This was the parent of several cultivars, none of

Fig. 6. 'Anna', one of Lem's first hybrid successes, which was important in his further breeding activities. Photo: Hank Helm.

Fig. 7. 'Lem's Cameo', probably Lem's best cultivar. Photo: Gerd Jørgensen.

which have had great success, like most *R. lacteum* hybrids. One, which was named 'H.M. King Olav V' during the Norwegian King's visit to Seattle in 1968, appears to be lost to cultivation as the stately mother-plant (Fig. 9) was destroyed after the sale of the nursery to a building society shortly after Lem's death in 1969. Lem may, though, have given away some grafts or seedlings, so if anyone has a specimen, I would be extremely pleased to be informed. As seen below, 'Fred Rose' was also involved in the creation of 'Lem's Tribute'*.

Fig. 8. 'Fred Rose', often used by Lem in his breeding. Photo: H. Greer.

Fig. 9. His Majesty King Olav V of Norway (with a hat) before the rhododendron named after him in Seattle, 1968. The Norwegian consul is at his right and to his left are official American representatives. Photo: Seattle Times.

The Newly Detected Cultivar

During a visit to Lem's ancestral home at Maurstad, Ole J. Larsen discovered an unusual, large rhododendron at the northeastern wing of the house (Fig. 10). He wondered if this might be a Lem hybrid, an idea I originally rejected since I knew of none that looked like this plant and thought it impossible that a specimen had arrived across from far-away Seattle. However, when I later contacted the present owner, Gunvor Elde, she informed me that her mother, Lem's niece, had told her that Uncle Halfdan brought this plant with him in his shirt pocket on his last visit to Norway, shortly before 1960. The hunt for a name failed, even with the very able assistance from Gwen Bell, Kenneth Cox and Harold Greer. It was concluded that this had to be an unnamed seedling. Clearly *R. calophytum* had to be in

Fig. 10. Lem's ancestral home as it stands today with the large, unknown rhododendron planted by him c. 1960 at its northeastern wing. Photo: Ole J. Larsen.

Fig. 11. 'Lem's Tribute' in all its glory in the garden of his grandniece in Bergen. Photo: Gunvor Elde.

the parentage because of the plant's stature, long leaves (Fig. 11), early flowering-time (March-April) and blotched, campanulate corolla and a protruding style with a discoid stigma (Fig.12). Gwen Bell confirmed that he had specimens thereof and had used these in his hybridizations, though few were named and on sale. None of the ones she had notes about were like this plant, so a search for the other parent had to be done on

its botanical characters. Fortunately Uncle Halfdan had sent home to his family several photos of his hybrids with annotations. One marked [*R. caucasicum* × (*R. lacteum* × 'Mary Swaythling')] (Fig. 13) looks very similar to the one growing at Maurstad, but differed in some characters, e.g., having brown hairs on the lower surface, and a different blotch in the flowers. I am, however, quite confident that here we have located the other parent, i.e., 'Fred Rose', even if Gwen Bell has no notes about him making this cross. There is reason to believe that he took with him a most special plant to his ancestral home, one that he wanted to plant as a tribute to his ancestors, particularly his mother, and hence the chosen name 'Lem's Tribute'. It is a wonderful plant with a good growth-form, fine foliage and beautiful flowers that are richly produced in early spring. It has not suffered any damage during cold winters, and it is completely hardy here, where occasionally we get down towards -20° C (-4 ° F). The present owner has layered a branch of this rhododendron and has now established a second plant in her garden in Bergen, where it has established well, has started to flower regularly after five years, and has reached a height of two m (6.5 ft), a fine addition to the early flowering assortment.

Acknowledgements

I am indebted to many persons who assisted me in unraveling this fascinating story, above all Halfdan Lem's grandniece Gunvor Elde, Bergen. I am further indebted to

Fig. 12. Detail of the flowers of 'Lem's Tribute'. Note the protruding style with a discoid stigma. Photo: Gunvor Elde.

Fig. 13. *R. caucasicum* X 'Fred Rose' on a photo Lem sent home to Norway. Privately owned.

Gwen Bell, Seattle; Kenneth Cox, Glendoick; Harold Greer, Eugene; Pam Hayward, RHS, London; Gerd Jørgensen, Bergen; Alan Leslie, Wisley Gardens; Terhi Pousi, Milde; and Rosaleen Wilkinson, Southampton. To all of you my warmest thanks, as without your efforts this article would have been impossible to write.

References

Bell, G. 1977. Halfdan Lem, hybridizer. *Quart. Bull. American Rhodo. Soc.* 31 (1): 7-11.

Bell, G. 1984. More treasures from Lem. *J. American Rhodo. Soc.* 38(4): 171-173.

Bell, G. 1988. Another view of Halfdan Lem. *J. American Rhodo. Soc.* 42(1): 11-14.

Cox, P.A., and K.. Cox. 1988. *Encyclopedia of Rhododendron hybrids*. Batsford. 396 pp.

Jørgensen, P.M. 2014. Norske Rhododendronsorter. *Lapprosen* 17(3): 4-6.

Jørgensen, P.M. and O.J. Larsen. 2017. Halfdan Lem, the man and his hybrids. *Rhododendrons, Camellias and Magnolias Yearbook 2017*: 47-55.

Millais, J.G. 1924. *Rhododendrons and the various hybrids.* 2nd series. London. 263 pp.

Nelson, S. 2001. *The Pacific coast Rhododendron story - the hybridizers, collectors and gardens*. Binford & Mort Publ., Portland, Oregon. 163 pp.

Wilkinson, R. 2004. *Townhill Park - The life and times of a Gertrude Jekyll garden.* Rosaleen Wilkinson Publ., Southampton. 190 pp.

Per M. Jørgensen is a professor emeritus at the Arboretet og Botanisk Hage, Universitetsmuséet i Bergen

Society News

Awards

NANAIMO CHAPTER
Bronze Medal: Kathryn Grant

It is with great pleasure that the Nanaimo Rhododendron Society bestows its highest honour on Kathryn Grant. She has been a member of the club executive, including several years as our secretary. During that time she and her husband Rick hosted many executive meetings at their beautiful home and garden in Ladysmith and were also willing to open their garden for local garden tours. She has supported many of our annual shows and sales by coordinating the cash registers, training others, and contributing to the follow up accounting. Most notably, Kathryn has willingly taken on the production and distribution of the chapter's newsletter which she has done for the last twelve years! Thank you, Kathryn, for your many years of dedicated service.

SOUTHWESTERN OREGON CHAPTER
Bronze Medal: Elizabeth Hultin

The Southwestern Oregon Chapter of ARS takes great pleasure in honoring Elizabeth Hultin with our chapter's highest award—the Bronze Medal. We are delighted to recognize someone who jumped in with both feet when she joined. She has had a long interest in rhododendrons and rapidly gained a great knowledge of them. She has since volunteered regularly for various chapter events such as the spring show and sale held every year, has attended national and regional conferences, and has served as treasurer, vice-president and president and board member multiple times. Her attention to detail and ability to follow through quickly and thoroughly with any task she as undertaken has been and continues to be a huge asset to our chapter In addition, she has hosted the summer picnic and has opened her garden for tours.

Always enthusiastic and involved, she has acquired an intense knowledge of rhododendrons, has incorporated rhododendrons and companion plants in many areas of her beautiful garden, and is a reliable and willing resource for many of us who are still learning how to propagate these amazing shrubs and trees.

Last, but not least, she has stepped in to make sure our meetings are well supplied with beverages and is always available for setting up at meetings and to fill in whenever an extra hand is needed. Her energetic and knowledgeable support for and participation in our chapter activities is hereby acknowledged with presentation of the Bronze Medal.

In Memoriam

Doris Louise Briggs

Doris Louise Briggs, 93, of Olympia, Washington, died of natural causes on April 11, 2017. Doris was born November 18, 1923, in Indianapolis, Indiana, and earned a BA from the Western College for Women in Ohio and a BS in Library Science from the University of Illinois. Doris worked at the Indianapolis Public Library and then for the

In Memoriam continued on next page

In Memoriam continued

Thurston-Mason County Bookmobile from 1947 to 1950.

Doris married Bruce Alford Briggs on July 23, 1950, and they worked together establishing Briggs Nursery as a world leader in ornamental plant production. Doris was active in nursery industry organizations and was the recipient of many awards, including the Outstanding Service Award from the Pacific Coast Nurseryman's Association in 2006, and was an active supporter of many community activities and organizations.

Doris and her husband Bruce were very active with their local chapter (Olympia) of the American Rhododendron Society (ARS). They were great contributors to the organization and were active in several projects. At the 2003 ARS Convention held in Olympia, WA, the ARS Pioneer Achievement Award was presented to Doris and Bruce, with the following words:

> Thanks to your dedication and commitment to research and innovation the nursery industry has a tool to grow the finest and newest selections of woody ornamentals. Your tenacity, born of complete conviction that tissue culture could be successfully applied to woody ornamentals, resulted in the advancement of rhododendron culture, propagation and distribution in America and throughout the world. In the early 1970s, in cooperation with other nurserymen, you discovered practical methods leading to breakthroughs in woody plant tissue culture and pioneered the commercial adaptation of tissue culture techniques to rhododendrons. Your practical knowledge was a key factor in this development which revolutionized the nursery industry. You have been active in plant propagation and distribution for over half a century. You have given generously your time and contributed plants to American Rhododendron Society chapters and conventions for many years. In the general field of horticulture your dedication, enthusiasm, skill and commitment to the sharing of knowledge have resulted in an impressive list of awards: ARS Bronze Medal, 1984; ARS Silver Medal, 1987; ARS Gold Medal, 1993; RHS Gold Medal (Veitch Memorial), 1998. You have received 15 additional awards from plant societies and organizations, have published more than 20 articles and frequently spoke to rhododendron organizations. Athough most of the awards and honors were granted in Bruce's name, your wife, Doris, deserves equal credit for her considerable role in these achievements. It is with great pride and appreciation that the American Rhododendron Society presents this Pioneer Achievement Award to Bruce and Doris Briggs.

Doris loved her family, and enjoyed horticulture, community activities, traveling, sports, fishing, hiking, camping and other outdoor activities.

In Memoriam continued on next page

In Memoriam continued

Norman Todd

Norm Todd founded the Victoria Rhododendron Society (VRS) in January 1980 and under his guidance, it has remained as a healthy, vibrant rhodo club for 37 years. Norm was its leader, its master, its dealer, its mentor, its guru!

When you bought a rhodo from Norm, you weren't just buying a rhodo. You received a lengthy dissertation on the origins of the rhodo, its parentage, whether good or bad, its quirkiness, its exposure requirements, how to water, when to fertilize, how difficult to deadhead, soil requirements, but above all the beauty of the trusses or foliage. Known BC-wide as Mr. Rhodo or the Rhodo Guy from Elk Lake, Norm's encyclopedic knowledge was legendary.

For decades, the most anticipated segment of VRS meetings was Norm's rapid fire, witty and educational descriptions of rhodos for our monthly famous Rhodo Raffle, which consists of a great number of plants, many of which came from Norm's Firwood Nursery. If you went to his nursery to get a rhodo from Norm, you were equally amazed at his propagating skills and vast collection. Many of us went to buy ONE rhodo, but usually came away with four or five rhodos that Norm felt we needed. On one occasion to buy just one rhodo, I asked Norm, "Why is it that the rhodo I want is always on the far side of the nursery?" "Ah", he said with his Cheshire Cat grin, "discerning buyers have a longer journey!" Brilliant, don't you think!

I also had the privilege of spending countless hours with Norm assembling his many VRS newsletter articles into a book, titled "The Complete Wit and Wisdom of Norman Todd", which contains 74 articles written over a 30-year period. One of the biggest challenges in revising the articles for the book was Norm's great glee in inventing words, or forms of words not recognized by any computer spell checker, in any language. One time, challenging him on one word, he protested with, "Well it's the Queen's English, it allows for variability in form!" (See the article on page 31.)

Norm received a Bronze Medal from the VRS in 1990 and an ARS Silver Medal in 2003, with the following comments in the latter: "Your knowledge makes you a sought after speaker, and your leadership has been instrumental in the formation of five chapters within District 1. Your written word has graced the pages of publications ranging from local newsletter to international journals. You have taken on all responsibilities from chapter executive to the international Director of Chapters at Large. You co-chaired the 1989 ARS annual convention which produced an attendance record that has yet to be equalled."

I think a real measure of a person's life is their influence on the next generation. The many people that attended the celebration of Norm's life were a testament to the great influence Norm has had on our next generation of rhodoholics. District 1 salutes you!

Calvin Parsons

In Memoriam continued on next page

In Memoriam continued

Kathy Van Veen

As so many of you know, the name Kathy is synonymous with rhododendron propagation and for owning and running the world famous Van Veen Nursery in Portland, Oregon. Although many people had never met her personally, she was easily recognized in conversation by her first name only. She was also known to be somewhat of a "character," but I can tell you as a friend and a colleague that she was a "person of character." She strongly defended her beliefs of what was wrong or right, and was steadfast in her resolve to carry on the Van Veen tradition of propagating rhododendrons. During her many years of work, she produced hundreds of thousands of rhododendrons. Those rooted cuttings were distributed to almost every corner of the world, and they are a reflection of Kathy's work and her love for a better world through the beauty of rhododendrons.

Those who knew her recognized her for her wonderful sense of humor. Her smile delighted those who visited her at the nursery. She brightened the day with her attitude toward life and she loved to be surrounded by her beloved rhododendrons, cats, birds, and friends.

Kathy was a devoted volunteer for the Portland Chapter in many capacities, carrying on in the long-time tradition that her father Ted was so well known for doing. She served as President of the Chapter and Chairperson for the Friends of Crystal Springs Rhododendron Garden, spending countless hours in her office working for the benefit of the Chapter.

Kathy's greatest wish was that the Van Veen Nursery would continue to grow and ship rhododendron cuttings. Her staff at the nursery and the Portland Chapter wishes you to know that her legacy will continue well into the future, and that the Van Veen Nursery will be rooting rhododendrons in her honor for many years to come.

Kathy was awarded the ARS Gold Medal in 2011 for her propagation services to individuals and chapters across the United States and Canada, for greatly increasing the variety of rhododendrons available to ARS members, and for generously sharing her knowledge and experience by giving programs at Chapter meetings and at ARS regional and national conferences.

We profoundly miss our friend, but we must remember how profoundly fortunate we were to have had her in our lives.

Mike Stewart

Society News

The ARS/DRG 2018 International Rhododendron Conference in Europe

The 2018 ARS Convention will be hosted by the Deutsche Rhododendron Gesellschaft (DRG) in Bremen, Germany. There will be three optional tours before the Convention and one optional tour after the Convention. Registration opened on September 1 to allow people enough time to book international travel. The three pre-tours in Holland, Germany, Denmark, and Sweden were booked up within ten weeks. The post-tour in Finland still had a few openings when this was written. We have people coming from Australia, Canada, Finland, France, New Zealand, Norway, Russia, the UK and the US. For more information and to see if there are any openings on the pre and post-tours visit the website at http://ARS2018.org.

The ARS six-day Convention runs from May 20 to 27, 2018, at the Swissotel in Bremen, Germany. And what a conference it will be. The main event is in Bremen and is a full week, with three days of tours and outstanding speakers from Germany, Scotland, Norway, United States, England and Ireland (all in English!). Registration includes seven nights lodging at Swissotel, seven breakfasts, five lunches, six dinners, and the annual meetings of both the ARS and the DRG. For more information see the Fall 2017 JARS. Registration forms were in the Fall 2017 JARS and are online at ARS2018.org/registration.php. If you have any questions, email registrar@ars2018.org.

Sunday, May 20, New arrivals join group in Bremen. Check in at Swissotel in Bremen for seven nights.

Monday, May 21, ARS Board Meeting and DRG Meeting. Lunch on your own. Welcome dinner in evening.

Tuesday, May 22, Convention - Part I: “From the wild....” and Explorer’s Club. Lunch is included. Dinner at Town House Cellar.

Wednesday, May 23: Bus 1 & 2: Bremen Rhododendron-Park and Botanic Garden with 600 rhododendrons species and 3300 cultivars; Bus 3 & 4: Ammerland bus tour: zu Jeddeloh Nursery, Park of the Gardens, Van den Berk Nursery. A light lunch and buffet dinner are included.

Thursday, May 24: Bus 1 & 2: Ammerland rhododendron gardens and nurseries: zu Jeddeloh Nursery, Park of the Gardens, Van den Berk Nursery; Bus 3 & 4: Bremen Rhododendron-Park and Botanic Garden. A light lunch and greenhouse dinner at Bremen Rhododendron Park are included.

Continued on next page

International Rhododendron Conference continued

Friday, May 25, Convention - Part II: "...into your life" & Gardener's Club and book signing hour. Lunch is included. Gala Convention dinner.

Saturday, May 26: Bus 1 & 2 and Bus 3 & 4: Ammerland rhododendron gardens and nurseries: Schröder Nursery, Bruns Rhododendron-Park and Nursery. Lunch at Schröder Nursery. Dinner at Bruns Rhododendron-Park.

Sunday, May 27, Departure day and beginning of Post-Tour to Finland.

Note that the convention fee is in euros and includes hotel accommodations for seven days, 18 meals, three days of tours, and two days of programs. When this was written, the €1,855 per person, double occupancy, fee

Rhododendron Calendar

2018	Scottish Rhododendron Society tour of Welsh gardens. April 22-29. Search: SRS 2018 Welsh GardenTour
2018	ARS Annual Convention, Bremen, Germany. Board Meeting on May 21st. Convention May 7–31 (including pre-convention and post-convention tours). Website: ars2018.org
2018	ARS Fall Conference, Chattanooga, Tennesee. Board Meeting. Dates to be announced.
2019	ARS Annual Convention, Malvern, Pennsylvania. May 16-19. Board Meeting.
2019	ARS Fall Conference, Parksville, BC, Canada. Board Meeting. Sept. 27-29.
2020	ARS 75th Anniversary Convention, Vancouver, Washington. Board meeting. April 30-May 3.
2021	ARS Annual Convention, Montreal, Canada. Board Meeting. Dates to be announced.

ARS Research Foundation Funds Proposal

Harold Sweetman
ARS Research Committee Chair

Committee Members: Harold Sweetman (Chair), Karel Bernady (Vice-chair), Robert Stamper, Sandra McDonald, Ben Hall, Stephen Hall, and Ann Mangels (President, ARS).

The following research proposal was funded by The Research Foundation of the ARS in 2017:

#17-1 "The role of the microbiome in disease resistance to *Phytophthora* pathogens in Rhododendrons: a mechanistic experiment across phylogeny."

Dr. Jean H. Burns, Department of Biology
Case Western Reserve University
Cleveland, OH 44106-7080
(Funding in the amount of $5,000)
Summary of Proposal:

The cultivation of Rhododendrons is sometimes limited by pathogens, including the very damaging root rot pathogen, *Phytophthora cinnamomi*. This research will use a greenhouse inoculation experiment to quantify pathogen susceptibility across 21 different *Rhododendron* species whose taxonomy includes Pentanthera, Ponticum, Rhododendron, and Tsutsusi. The goal is to try to determine whether and to what degree the soil root zone microbiome mediates disease resistance. These researchers define the microbiome as the entire microbial environment, consisting of the microbiota (e.g., fungi, bacteria), the genes they possess, and their environment. Taking a phylogenetic comparative approach may generate new insights into evolution of disease resistance and begin to identify its underlying mechanisms. This two-year project involves germinating seedlings in year one then inoculating the second year with field collected soil microbiota. Plants will then receive inoculum treatments of live and sterilized soil microbiota. The microbes will be allowed to establish for two months then plants will be inoculated with *Phytophthora cinnamomi.* Seedling survival will be measured by census three-times a week and researchers will quantify plant performance using total final plant dry weight. Roots will also be collected for
morphological characterization. All work will be conducted in greenhouses at the Holden Arboretum.

The Research Committee reviewed this proposal and assigned ranking based on several established criteria. The Research Committee recommended funding in 2017 from the Research Foundation of the ARS of one proposal. The Trustees of the Foundation approved funding based on the Committee recommendations.

On behalf of members of the Research Committee, I would like to give an important thank you to the Trustees of the Research Foundation for their stewardship of the Trust which has allowed for uninterrupted research funding over these many years.

ARS Endowment Grant Program: Guidelines for 2018 Application

Bill Mangels, Chair
ARS Endowment Fund Committee

The purpose of the American Rhododendron Society (Society) is the encouragement of the culture of rhododendrons, including azaleas, and the increase in understanding of and interest in all aspects of these plants. In support of this mission the Society has established a grant program utilizing funds from its endowment. Activities to be supported may include the development of programs, projects or publications that educate the general public in the growing and culture of rhododendrons. Amount of grants will generally not exceed $3,000.

Proposals are accepted up to the deadline of **March 1, 2018,** and must be submitted to the Endowment Fund Committee. The applicant must notify the appropriate District Director of the application and request a "letter of assessment" to accompany the application. The appropriate District Director is the one whose geographic responsibility includes the location where grant will be utilized. The application and letter of assessment will be reviewed by the Endowment Fund Committee and their recommendation will be acted upon by the board at the annual spring meeting. Successful applicants will be supplied "Condition of Acceptance" letters and upon completion and return to the Society, funds will be sent to the applicant. Unsuccessful applicants will also be notified after the Board meeting.

Proposals should request funding for a single calendar year or less and only one proposal per applicant will be considered. A complete proposal must include:

1) Background and history of the applicant group and the role it provides in the encouragement and understanding of rhododendrons and azaleas. Newsletters and other publications that describe the applicant are welcome.

2) Description of the project and its objective.

Continued on next page

Endowment Grant continued

3) Statement of how the project fits the interest of the American Rhododendron Society. How does it educate? How many people will be affected?

4) Budget for the project, a timetable for its completion, and a statement of whether partial funding would or would not be useful. Note: no changes in the budget or nature of the application will be accepted after submission without prior approval from the chair of the Endowment Fund committee.

5) List of the group's current sources of support and income.

6) List of all sources, from which funds are currently being sought for the proposed project, including any support already confirmed.

7) Letter of assessment from the appropriate District Director.

The application can be sent by postal mail or email to Bill Mangels, Chair of the Endowment Fund Committee.

Create a Legacy with the ARS Endowment Fund

You have great opportunity to give back to the rhododendron community and be part of the incredible difference that can be made through your support! A tax deductible gift will help strengthen the society by increasing the financial capacity of the Endowment Fund to support projects that broaden the interests, curiosity and knowledge of future generations attracted to rhododendrons and azaleas.

It is the income and growth from the Endowment Fund that provide grants to worthwhile projects and funds special activities in accordance with the Society's mission. With your endowment gift you can honor a special person or event or memorialize a friend or loved one. By combining your respect for that special person with your passion for rhododendrons you can enhance your legacy and help the Society at the same time. Whether you make your gift now or as part of your estate, you are helping the Society share its mission now and in the future.

A donation to the Endowment Fund can make that happen and help the Society. Please mail your gift to: ARS Endowment Fund. P.O. Box 214, Great River NY 11739.

Society News

ARS Board of Directors Meeting
October 20, 2017, Richmond, Virginia

1. Welcome

President Ann Mangels welcomed board members. She announced that the Executive Committee had approved the appointment of Bruce Feller as Acting Past President in the absence of Bob MacIntyre. At this time, it appears that nine members of the board are planning to travel to the ARS 2018 Convention in Bremen, Germany. Others are still deciding. There was discussion as to whether there would be a quorum present at the convention.

2. Bylaw Amendment - Second Reading

Moved by Ken Webb and seconded by Steve Henning that Article V of the Bylaws, Society Officers and Their Duties, Subsection I, Office Administrator be deleted.
Carried

3. President's Report – Ann Mangels

- Ann reported that the finances of the ARS are in good shape.
- June Walsh has agreed to chair the Membership Committee.
- Don Hyatt has volunteered to assist with the Program Library.
- The new Rhododendron Research Coordination Network will be chaired by Juliana Madeiros of the Holden Arboretum and Erik Nilsen of Virginia Tech assisting. Also involved are Steve Krebs, Eastern Vice President and Director of the Holden Arboretum and Glen Jamieson, scientist and Editor of JARS.
- A Task Force chaired by Ken Webb has been working to replace Sonja Nelson who will retire after almost 20 years with the JARS and the ARS – she will be missed very much.
- Another Task Force focused on a request by Ken Cox to collaborate with the Rhododendron Species Foundation on the distribution of his new book on woodland gardens. The Executive Committee decided not to proceed with this opportunity due to financial constraints.
- Sadly, the Tappan Zee Chapter is dissolving due to declining membership.
- The Australian Rhododendron Society has asked to join the ARS as a chapter or a district. Paul Anderson, Director at Large and June Walsh, Membership Chair will pursue this very exciting possibility.

4. Highlights from Executive Members, District Directors and Committee Chairs:

Continued on next page

ARS BOD Meeting continued

- Bruce Feller suggested that the agenda for the board meeting in Bremen include the reports from each of the European Chapters.
- Ken Webb reported on the process of registration for the convention in Bremen.
- Treasurer Dave Banks reported end of year financial status, and noted that the restructuring effort of the past year has reduced, but not yet eliminated, our dependence on the Endowment Fund.
- Discussion regarding the cost of travel to Board meetings. While some Districts reimburse travel for their Directors, ARS officers and committee chairs get no financial assistance. There was a proposal that Richard Fairfield lead a task force to look at reducing travel costs of ARS Board members.
- Proposal to develop a "rhododendron of the day" app to be used to promote the ARS among a younger demographic than is reached by the website.
- District 2 is now combined with District 3 under Richard Fairfield as Director.
- Brenda Ziegler of District 4 reported that the Van Veen Nursery has been bequested to the Portland Chapter, and is open and operational. Brenda offered many ideas for retaining and increasing chapter membership.
- Bill Meyers reported that District 9 chapters are working on reducing attrition and attracting "younger" members; many plant societies are partnering with botanical gardens, *arboretae*, public parks and gardens, horticultural programs at local colleges and universities, etc to raise their profile and attract new members
- Don Smart, Fundraising Committee Chair, is seeking volunteers from local chapters who have grant-writing experience.
- The limit on the number of Silver and Gold Medals for 2018 will be temporarily suspended
- Work to select Rhododendrons of the Year will begin very soon.
- Don Smart, Speakers Bureau Chair, wants to know if chapters have used the bureau and is it still a useful tool.
- The ARS is seeking an attorney who is a member of a chapter, and willing to do some pro bono work from time to time.

Linda Derkach
ARS Secretary

District Directors Election

The nominations for District Director and District Director Alternate positions for Districts 5, 8 and 9 are pending. They will be announced in the Spring JARS.

For the Cat Who Has Everything

Norman Todd
Victoria, BC
Canada

[**Editor's note:** The following article was first published in the Victoria Rhododendron Society (VRS) chapter newsletter of December 1993. This whimsical column is learned in history, rhodo-botany, Latin and feline psychology, and whimsy above all. It was later republished in a book by the VRS (2011) titled *The Complete Wit & Wisdom of Norman Todd*. Sadly, Norm passed away this year, and is very much missed. See In Memoriam on p. 51]

Did you notice the word "who" in the title? If you do not think of cats as persons, this article will not interest you. It will interest you if you are in that most frustrating of situations when you just can't think of the ultimate present for that most significant cat in your life—to be given on that very, very special cat day. I have the answer and it may surprise you. It was *Rhododendron roxieanum* var. *oreonastes.*

Don't turn off right now because you think *R. roxieanum* var. *oreonastes* will be too difficult a name for your cat to appreciate—just hang in and read a bit more. You see, cats don't know many things by their names. And it is pretty well useless trying

R. roxieanum var. *oreonastes.* Photo by Sue Lightburn.

R. roxieanum var. *oreonastes*. Photo by Garth Wedemire.

to get a cat to understand abstract things, e.g., things like "the Natural Law Party" or "relativity." Cats recognize most things by smell. That is how they recognize pretty well all tangible things; smart cats can even sense a few abstract things using this sense. Anyway, *R. roxieanum* var. *oreonastes* sends cats into paroxysms of ecstasy. We all know that paroxysms do not always occur as pleasant events but when you see that closed-eyed Cheshire look on your cat's face and feel the vibes from its tremulous twitching little nose, you will know this paroxysm is a good one. You could also object to using a fairly abstract word like "paroxysm" for your cat's intemperately orgasmic raptures, but even if your cat does not know that precise word, you can be sure it has a complete fix on the idea.

R. roxieanum var. *oreonastes* is a classic rhododendron fit for the garden of the most fastidious connoisseur. It kind of looks like a land-based green sea urchin, that is *Strongylocentrotus droebachiensis*, just in case your cat is of the more than normally curious type, still alive and might like to know that. *R. roxieanum* var. *oreonastes* belongs to the Taliense affiliation and, at least from a nurseryperson's point of view, possesses all of the bad qualities of that tribe, i.e., it is almost impossible to propagate from cuttings, is not easy to graft and, as it takes eons to bloom, it is hard to get seed and when you do, it might not be viable. When it does bloom, however, it is a real joy to behold and if you find yourself in the position of beholder, you could be excused for having one of these paroxysms all to yourself.

Being such a coveted plant, it makes sense for those who do own this rare and expensive rhododendron to be discreet and selective in letting the fact of your ownership be widely known because most of the specimens of *R. roxieanum* var. *oreonastes* in captivity are of a very portable size and visitors could have a paroxysm of envy and greed which could even end up in thievery. You might think, then, that it would be logical,

Foliage of *R. roxieanum* var. *oreonastes*. Photo by Sue Lightburn.

if you value your status as a collector of rare plants more than the love of your cat, not to tell your cat you have one in your garden. However, I would advise against not telling your cat because it is a sure bet that your cat will sense the precise minute *R. roxieanum* var. *oreonastes* crosses your lot line. And anyway, you, having read this far, must be darn nearly desperate to let your cat experience one of those incontinent paroxysms.

If you know your Latin (I don't, so I'm just waiting for someone to tell me this paragraph is all nonsense) you will quickly intuit that the name itself—*oreonastes*—gives away about this interesting reactionary feline phenomenon. The *roxieanum* part of the moniker is something of a letdown because it's one of these commemorative names, eternally memorializing a Mrs. Roxie Hanna of Tali-fu, China, who was a friend of the plant's discoverer, or at least describer, George Forrest. Too bad we don't know more about Mrs. Roxie Hanna—perhaps, who knows, she may have had a weakness for aromatically induced paroxysms.

It's the *oreonastes* bit that is the mother lode. The "oreo" portion really means "mountain" in Latin, but cats are not too well versed in dead languages and, get this, they recognize the modern meaning of "oreo". i.e., "cookie"! Ah ha! So then we move on to the "*nastes*" bit. You may not believe this, but this is the exception that proves the rule; cats have almost instant recognition of what "nastes" means in Latin. They do not make the correspondence to the modern English meaning of "nastes", i.e., "unpleasant," but go right to the Latin word "nasitortium" which means "distortion of the nose." You look at your cat in its oreonastical paroxysm and you will see what "nasitortium" means! The Romans knew what it meant and so does your cat. Nasturtiums evidently gave Romans nasal paroxysms and that's what they called them nasturtiums.

Romans almost certainly never said or smelled *R. roxieanum* var. *oreonastes*. It's almost impossible to be absolutely sure what kind of paroxysms they would have had they done so. Most likely, they would have given it a very wide berth after Pompey's 67 B.C. army's unfortunate run-in, which quickly developed into a run-out, with the poisonous honey from the Pontic azalea (*R. luteum*). In that instance, Pompey's army surely had a debilitating and paralyzing collective paroxysm that cost most of the soldiers in the army their lives at the hand of Mirthridates, King of Pontus.

Perhaps this does bring up a cautionary point. Watch out that there are no predators

around when your cat is having its paroxysm because they are sitting ducks in that state and to compound it, you yourself, might end up having a paroxysm of grief when looking at the moribund remains of your pet.

At this point I'm sure you want to know how I came by all this dope on God's ultimate gift to mousers. Well, the first *R. roxieanum* var. *oreonastes* I had I kept in a pot. At that time, I did not know how addictive it was to cats, but anyway it must not have been cat-accessible. Probably I kept it in the greenhouse, and it got to be about fourteen or fifteen inches (35-38 cm) tall and in time produced a flower bud. I must say my mind ran to thinking about installing special security devices to protect from human predation but I was guilelessly unaware that there were four—count them—Tristan, Smudge, Timmy and Kate incipient paroxysmatic pussies right in my very own home. I wondered why all of those exquisite narrow, lanceolate, indumented botanical marvels of advanced photosynthetic evolution were lying around the base of the plant. Then the flower bud disappeared and I had to look more closely.

We all know what rhododendron hairs are but the hairs I found were 2.1 to 4.6 cm (0.8-1.8 in) long, glandular, glabrous, white, sometimes black and white, orange flushed brown or black. These weren't rhododendron hairs. They were cat hairs!

Next piece of evidence! At last year's (1993) club picnic, I won the door prize—a *R. roxieanum* var. *oreonastes*. It was a beautiful plant in a four gallon (15 l) pot. It had been expertly grown by Clint Smith. I went home thinking that the '93 picnic was the best we had ever had. It sat on the deck where it could be admired from the kitchen window—by people. But it was admired much more closely by the purring pussy cats that lodge (dare I admit to thinking "temporarily") at 5631 Batu Road, Victoria. They had an orgy of paroxysms and one of the main branches was amputated—covered with cat hairs. Some of you may see this as presenting a dilemma. Which or who comes first, cats or rhododendrons? I suspect most of you will plunk for the former and you will want to ingratiate yourself to your fat feline friend, by getting him, her or it that transcendentally perfect gift, *R. roxieanum* var. *oreonastes*.

Don't be tempted by the claims of shysters touting catnip. This is like comparing slug's eggs to sturgeon caviar. Go for the best, but be prepared for difficulties because *R. roxieanum* var. *oroenaste*s is not easy to find. You will have to be committed and resolute in being your cat's benefactor responsible for providing the greatest hallucinogenic rapturous paroxysms by acquiring, preferable by theft, *R. roxieanum* var. *oreonastes*. Cats truly pass this way but once. Dismiss that view that a cat's life is a vale of tears, and make it a Garden of Eden. You now have the answer!

Reference

VRS. 2011. *The Complete Wit & Wisdom of Norman Todd.* Victoria Rhododendron Society: 228 pp.

2017 ARS Photo Contest Results

Winner
Best in Contest

Don Hyatt
Potomac Valley Chapter
The vireya *R. tuba* at the
Rhododendron Species
Botanical Garden in
Federal Way, Washington

Runner-up
Best in Contest

Don Hyatt
Potomac Valley Chapter
Pollinator *Papilio rutulus*
(Western tiger swallowtail)
on a native American
azalea hybrid

1) Flower, truss or spray

Co-winner: **Karel Bernady**
Greater Philadelphia Chapter, *R. calendulaceum* fingers, Hooper Bald, Nantahala National Forest, Graham County, North Carolina

Co-winner: **Lindy Johnson**
Southeastern Chapter, an unknown rhododendron from the Lukesland Garden in Devon, UK

Co-winner: **Karel Bernady**
Greater Philadelphia Chapter, *R. canadense* (prev. *R. rhodora*), Thomas Darling Preserve, Monroe County, Pennsylvania

The Three 2017 ARS Photo Contest Judges

1) **Doreen Wynja** is Oregon based and principle photographer for Monrovia. She's been a professional photographer for 30 plus years, with her primary work being commercially driven. Her imagery graces the pages of *This Old House, Fine Gardening, Sunset Books* and *Garden Design* to name a few. You can contact Doreen, or see her imagery at EyeoftheLady.com where you'll find an ever-growing Horticultural Library and scads of gardens to stroll through. Enjoy the View!

2) **Stewart Yee** lives in Vancouver, BC, Canada, and has a BSc in marine biology (1982) from the University of British Columbia and a diploma in freelance photography (1991) from the Pacific Western Academy of Photography. He spent about ten years as a part time photographic assistant and as a professional freelance wedding photographer in the 1990s, and is now a passionate nature and travel photographer.

3) **Dr. Glen Jamieson**, JARS Editor and keen photographer.

2) Plant in bloom

Winner: **Don Hyatt**
Potomac Valley Chapter, the vireya *R. tuba* at the Rhododendron Species Botanical Garden in Federal Way, Washington. **See Photo on page 64**

Co-runner-up:
Richard N. Jones
Noyo Chapter,
Rhododendron layers including 'White Pearl'

Co-runner-up:
Steve Henning
Valley Forge Chapter,
Unlabeled rhododendron,
Mt. Cuba Center,
Hockessin, Delaware

3) Landscape or plants in the wild or in gardens

Co-winner:

Don Hyatt
Potomac Valley Chapter, *R. calendulaceum* along the Appalachian Trail at Engine Gap

Co-winner:

Gordon Walters
Great Lakes Chapter, Unnamed pink hybrid and *R. catawbiense*

Co-winner:

Gus Thompson
Mount Arrowsmith Chapter, path through 50-year-old tree-sized rhododendrons beneath a forest arch in Milner Gardens, Qualicum Beach, British Columbia

4) Foliage

Winner: **Don Hyatt**
Potomac Valley Chapter, *R. brachycarpum* subsp. *brachycarpum* at the Rhododendron Species Botanical Garden, Federal Way, Washington

Runner-up:
Marc Colombel
Scottish Chapter, *R. protistum* var. *protistum*

5) People, insects or animals

Co-winner:
Don Hyatt
Potomac Valley Chapter, Pollinator *Papilio rutulus* (Western tiger swallowtail) on a native American azalea hybrid

Co-winner:

Kristian Theqvist
Finnish Chapter,
mating green shield
bugs (*Palomena*
prasina) on strongly
honey scented
young leaves of *R.*
sphaeroblastum

Co-runner-up:

Marc Colombel
Scottish Chapter
Grasshopper

Co-runner-up:

Kristian Theqvist
Finnish Chapter,
Mountain hare
(*Lepus timidus*)
relaxing in my
rhododendron
garden

6) Other; for creative or artistic effects of any kind that involves these plants

Winner: **Gus Thompson**
Mount Arrowsmith Chapter, Rhododendrons are surrounded by the colourful leaves of Japanese maples and other deciduous trees at Milner Gardens on Vancouver Island, British Columbia, Canada

Co-runner-up:
Kathy Woehl
Valley Forge Chapter
R. maximum

Co-runner-up:
Marc Colombel
Scottish Chapter, *R. erosum*

Why Some Plants have Huge Leaves

Ian Wright
Macquarie University
Sidney, Australia

(Modified from New Scientist, *Sept 9, 2017, p 20)*

What is the point of the enormous leaves found on some tropical plants? It may be due to maintaining a comfortable temperature.

Large-leaved plants like bananas tend to live in the tropics, while smaller-leaved plants like heather are closer to the poles [or in alpine areas]. Botanists first noticed this trend in the 19th century but no one has been able to explain it. Large leaves absorb more of the sun's heat and get hotter than small ones, so if overheating is the issue, big leaves should be found in colder regions, not the tropics.

To solve the puzzle, Ian Wright (Wright *et al.* 2017) at Macquarie University in Sidney and his colleagues studied 7670 plant species from different latitudes. They looked at the relationships between leaf size at aspects of climate such as day and

Rhododendron sinogrande.
(https://landscapeplants.oregonstate.edu/plants/rhododendron-sinogrande)
A mid-elevation rhododendron with very large leaves in the Himalayan mountains.

night temperatures, rainfall and humidity. They found it was just as important to avoid night-time freezing as day-time heat stress.

Dodonaea viscosa subsp. *spatulata*.
(http://saseedbank.com.au/species_information.php?rid=1516)

Not too hot, not too cold

Wright and his team showed that this balancing act depends on two main factors. The first is how much water the leaf has available to cool itself down via transpiration. The second is the boundary layer: a pocket of still air that surrounds each leaf and acts as an insulator.

Large leaves have thick layers of still air around them, which makes it harder to extract heat from their surroundings at night. This makes them a bad idea in high latitudes [or altitudes]. They are also bad in hot deserts because they overheat during the day. But big leaves do well in hot, wet tropical climates because they can cool down using transpiration— the plant version of sweating.

Andrew Lowe at the University of Adelaide in Australia says it's a "nice explanation." It may also help to predict how climate change is likely to alter plant distribution, Lowe says. "For example, if a particular region becomes warmer and drier, you may see smaller-leaf species replacing larger-leaf species because they're better adapted to the new climatic conditions." Lowe has previously shown that the leaves of the shrub *Dodonaea viscosa* [Hopseed bush, a species of flowering plant in the soapberry family Sapindaceae that has a cosmopolitan distribution in tropical, subtropical and warm temperate regions of Africa, the Americas, southern Asia and Australasia] have narrowed by two mm (0.08 in), or 40%, over the last century, possibly in response to rising temperatures. "It seems that leaves are already changing," he says.

Reference

Wright, I.J., N. Dong, V. Maire, I.C. Prentice, M. Westoby, S. Díaz, R.V. Gallagher, B.F. Jacobs, R. Kooyman, E.A. Law, M.R. Leishman, Ü. Niinemets, P.B. Reich, L. Sack, R. Villar, H. Wang, and P. Wilf. 2017. Global climatic drivers of leaf size. *Science,* 01 Sep 2017: Vol. 357, Issue 6354: 917-921.
DOI: 10.1126/science.aal4760

A rhododendron plantation in a Helsinki city garden.

100 Years in the Breeding of Ornamental Rhododendrons in Finland

Peter M.A. Tigerstedt
Arboretum Mustila,
Elimäki, Finland

The Climate at Arboretum Mustila, the Cradle of Hardy Finnish Rhododendrons

Arboretum Mustila is located at latitude 60°44'N, which puts it at approximately the same latitude as the south tip of Greenland, the midpoint of Hudson Bay in Canada, Anchorage in Alaska or at Magadan, north of the Ohotsk Sea in the Siberian far east. Only in Finland at this latitude in the world can wheat be grown, as there is a nearly

A rhododendron plantation in a Helsinki city garden.

24-hour day length at midsummer. This photoperiodic discrepancy affects the survival of many plants that are native up to about 30° further south, which is a culture problem in central Europe for most introduced woody ornamentals originating in China and elsewhere in the world.

We have found that introduced ornamental flora face critical "bottleneck years" at irregular intervals of about 15 years, a rough frequency at which winter low temperatures sink to close to -40° C (-40° F), when frozen ground in April-May causes plant desiccation, when there is an early summer drought, when the late spring night temperature falls to -10° C (14° F) or when the first frosts come in mid August. It is clear that "extreme hardiness" means genetically "extreme complexity," as there is no single gene effect and no single environmental effect!

Mustila is climatically located between two major climate types: the Siberian continental and the Atlantic maritime climates. The swing from one to the other can be within a few days, even within hours. Clearly the effects of the Gulf Stream are the prime reason for our being able to grow wheat and rhododendrons at this latitude, and even further north to about 65°N. Elsewhere in the world permafrost is most common this far north.

At Arboretum Mustila, -43.5° C (-46.3° F) was measured in February 1940. Between October 11, 1941 and April 11, 1942 the temperature was below freezing for 166 consecutive days and the average temperature for January was -18.5° C (-1.3° F)! These were the "Siberian bottlenecks" that sorted planted rhododendrons for hardiness, many

having by then reached heights far above the snow cover. This was for example when "the hundreds of individuals in both the Tigerstedtii Group" of *R. brachycarpum* and the "Rudolph Seidel" hybrids, sent to us as raw seed material, experienced "natural selection," one of the breeding axioms at Mustila.

The mild and humid "Atlantic" winter climates can cause plant dormancy breakage and flushing in late winter, to be followed with subsequent freezing. This may also cause sudden pest and disease outbreaks with disastrous repercussions, with plants from continental climates particularly suffering.

The azalea plantation in a Helsinki city garden.

Milestones in the Introductions of Rhododendrons to Mustila

A.F. Tigerstedt, my grandfather, a geologist by education, established Arboretum Mustila about 115 years ago. His motive was to survey world tree species to find sources that could produce more valuable wood than the indigenous tree flora. The early introductions were entirely based on climatic maps and seed ordering. Thus, for example, Douglas-fir (*Pseudotsuga menziesii*) was introduced from seed collected from the Upper Fraser River, Quesnel, B.C., Canada, in 1908, and it still represents a provenance never replaced by a more suitable one. The British Columbia interior climate seems to be almost identical to ours—swinging between Canadian continental and Pacific maritime climates. A rough thumb-rule was learned: 100 m (328 ft) in altitude corresponds to one degree in latitude. Later, this rule was applied to collections in the Carpathians, the Caucasus and China. Provenances collected to match climates in central Europe must be extrapolated to our conditions by moving roughly one kilometre higher in mountain areas.

C-G. Tigerstedt, my father, a botanist by education, enlarged the spectrum of introduced species to cover also woody ornamentals and herbaceous perennials. He established the Mustila commercial plant nurseries, the first price list being in 1933. Early rhododendron species introductions came in 1915 from Regel & Kesselring Co. in St. Petersburg, Russia. A few years later, bulk hybrid seed introductions came from the Seidel Nurseries in Germany. In 1933, seed was received from Korea under a false

The azalea plantation in a Helsinki city garden.

name, *R. chrysanthum*. My father wrote (Tigerstedt 1949): "This fine Rhododendron variety has remained firm in a free and sunny nursery, without any shelter, not even snow, also during 1940. . . A basis for further hybridizations!" This is the source that Cox and Cox (1997) name "perhaps the hardiest of all rhododendrons, having withstood -45° C" [-49° F]. It has been called variously *R. brachycarpum* subsp. *tigerstedtii* Nitzelius, *R. brachycarpum* var. *tigerstedtii* and "Tigerstedt Group" [now called *R. brachycarpum* subsp. *brachycarpum* by Chamberlain 1996]. I venture to call it "clinal variation within *R. brachycarpum*"—a geneticist's simplistic conception!

In the 1940s there were several exceedingly cold and unusual winters and summers. Many of the approximately 40 rhododendron species introduced to Mustila before the "winter-war" of 1939-40 and World War II succumbed and the arboretum was finally left with only the hardiest possible material from several species populations and Seidel bulk hybrids. As particularly hardy species, my father in 1949 mentioned (Latin names as of 1949) *R. brachycarpum* D.Don*, R. caucasicum* Pallas*, R. smirnowii* Traut., *R. degronianum* Carriere, *R. rufum* Batal., *R. przewalskii* Maxim. and *R. catawbiense* Michaux. A number of unusually firm Seidel hybrids, which are presently under special scrutiny by Walter Schmalscheidt in Germany, also came through, virtually without injury.

In 1950 and 1951, Mustila was visited by two people who injected new rhododendron knowledge and excitement, namely Wilhelm Kesselring and Dieter Hobbie. Most of the 1950s was a period of rebuilding after the war and little new material was

introduced, but careful observations were taken on plant hardiness and generally on the effects of the unusual photoperiod on material coming from more southerly locations that had dark nights in June. It was found that for example, *R. przewalskii* had never flowered, probably due to photoperiodic constraints. In the 1960s, ecological genetics, genecology and generally the genetic background of adaptation became the focal point in research, not so much in rhododendrons but especially on introduced conifer species.

Thus in the 1970s, when the author entered the department of Plant Breeding at Helsinki University, my father's comment in 1949 "rhododendrons, a basis for further hybridization" was put into action. The breeding project became a close collaboration between Arboretum Mustila (mother plants), Helsinki University (planning, student assistance and plant nursing) and the Helsinki city gardens (hybrid plantings). The city gardens were prepared to invest considerably in order to create what we call "hybrid plantations." About 20,000 rhododendron hybrids were planted in the "plantations" between 1975-1985. These plantations are now perhaps the most popular public gardens in the Helsinki area, thus indicating that it is possible to combine usefulness with pleasure and in doing so to create public interest and appreciation for a rhododendron plant breeding programme. A hybrid plantation of this kind is definitely more dynamic and alive than a conventional garden plantation using only cloned cultivars. The reason for this is a great genetic diversity in growth habits, colours and flowering times—biodiversity in front of your eyes! Other city gardens also came to our rescue and seven

The azalea plantation in a Helsinki city garden.

hybrid plantations were established around the country. It must be emphasized that hybrid plantations are in a way "hybrid gene pools" that can be used for an unlimited future for new selections, but particularly for new rounds of hybridizing.

The best plants in the hybrid plantations were cloned for further comparative trials and for the release of cultivars in the 1990s, and to this date, almost 30 cultivars have been named, one of the latest being 'Raisa' to honour Michail Gorbachov for the establishment of the haematological children's hospital in St. Petersburg, where 100 'Raisa' plants were planted in May 2012. In the meantime, and predominantly due to public acceptance and popularity, a new cadre of amateur breeders have set out to continue hybridizing (second round) on the basis of our first round results. At present, more than 1000 elepidote, 100 lepidote (including *Ledum*) and 50 azalea hybrids have been produced. The problem now is monumental—how to establish large enough hybrid plantations in order to select "the best of the best," remembering that each cross between two species must be represented by tens of plants, while each hybrid X hybrid or hybrid X species should be represented by hundreds of plants to ensure effective gene recombination in the second and later filial generations. Raising only a small number of individuals at this point is "a training in futility" and a waste of time and energy. Fortunately our first round hybrid plantations have given us plenty of understanding and goodwill. In Finland, finding space for trials is not a problem, but to achieve economic potential is a much more problematic issue, particularly when the selected new cultivar has such a limited market within a small country. This has made us more and more aware of the importance of joint ventures at the largest possible international scale.

Hardiness—an Ambiguous Concept

Absolute low temperature tolerance can be measured during dormancy. However, this parameter alone is of little value when evaluating rhododendrons growing in different parts of the world with different thermal conditions and photoperiods. The issue becomes even more confusing when considering possible genetic adaptations to thermal and photoperiod conditions at the present location. China's mountains, at about 30-40°N and at 3000-4000 m (9842-13,123 ft) altitude are certainly grossly different from Mustila at 60°N and 50-70 m (165-230 ft) above sea level, generally also with a considerably lower effective temperature sum. Even light wavelength composition, considering differences in altitude, has been shown to cause unexpected plant responses. In this mix of interactions, only field grow out results are a reliable measure of actual hardiness.

Selection in Large Populations

R. brachycarpum subsp. *tigerstedtii* was introduced to Arboretum Mustila by the planting of hundreds of plants. After the 1940's "iron winters," some 30 were left,

some without visible injuries, and these plants then became the maternal basis for our breeding program.

This is a good example of how to adjust adaptation to marginal conditions using "natural selection" (Tigerstedt 1994). There are many examples of fast adaptation, i.e., within a generation, to new environments, particularly when cross pollinating plants. Adaptation may have a population genetic background if plenty of genetic diversity is present in the population. However, it seems to me, that epigenetics [the study of heritable changes in gene expression (active versus inactive genes) that does not involve changes to the underlying DNA sequence—a change in phenotype without a change in genotype—which in turn affects how cells read the genes] may also have an effect, as discussed later.

Complex hardiness is definitely a quantitative trait governed by polygenes, or by co-adapted gene complexes, tightly linked together. Thus in our population-based genetic approach to "selection for adaptations," it is obvious that we have to consider large plant numbers (Hill et al. 1998).

Thus:

1) New species evaluations must involve hundreds of plants to let natural selection take its toll in the new environment.
2) F_1 hybrid populations from the crossing of two species don't require as many progeny to evaluate the consequences, as each parent's genetic contribution in their progeny is still largely intact and genes are "co-adapted" on the chromosomes. Here, only tens of hybrid individuals are needed for characteristic evaluations in the first round of hybridizing.
3) F_2 and later generations have the grandparents' gene sequences more extensively mixed and so more new recombinant genotypes occur. This is the case both in hybrids of "species X hybrid" and "hybrid X hybrid". Probability theory tells us that "picking a winner genetic combination" is then mainly a numeric exercise. However, with rhododendrons, for practical reasons, plant numbers must be restricted to the hundreds, considering their relatively large space requirements at the time they commence flowering. That is why we coined the concept of a "hybrid plantation."

Tailoring Growth Profiles in Breeding

Growth profiles (Fig.1) were first defined by the author in observing introduced tree species at Arboretum Mustila (Tigerstedt 1990). In the semi-maritime climate type at Mustila, freezing injury in woody plants roughly is generally as follows:

1) Continental introductions are damaged by spring frosts due to their early flushing.
2) Maritime introductions are damaged by autumn frosts due to their later seasonal growth.

3) Alpine introductions are slow-growing and are generally undamaged by either early fall freezings or later spring freezings,

Several hybrids in the *Larix* (larch) and *Abies* (fir) families have shown us that hybrids between continental and maritime provenances are intermediate in their growth profiles, and are thus particularly well adapted to Finland's semi-maritime climate, between the Atlantic and Siberia. Intermediate inheritance is also proof of a quantitative (polygenic) genetic background in growth rhythms, governed basically by thermal tolerance and photoperiod duration, but also by light composition changes due to elevation.

There are other regions in the world where semi-maritime areas occur, where the two climate types (continental and maritime) are close together and partly overlap, and where weather conditions can alter within days, weeks and years. This is also the case in St. Petersburg as well as in Arboretum Mustila.

In such areas, the natural flora has to be adapted to tolerate a wide climatic variation, and selection may not just favour tolerance of a particular extreme condition. From a population genetic point of view, plant populations may be subject to "diversifying selection" giving them a wide tolerance adaptation. For example, Siberian larch west of the Ural Mountains have shown exceptionally wide climatic adaptation due to the fact that this region also swings between maritime and continental climate conditions.

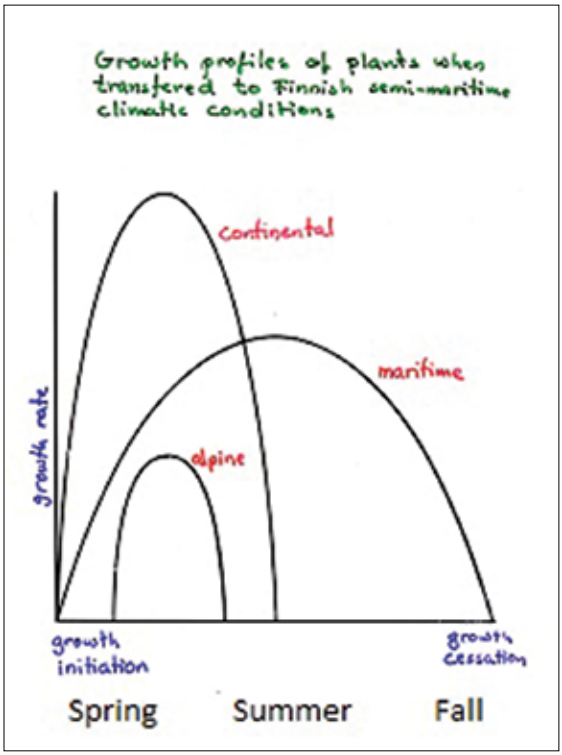


Fig.1. General growth profiles of plants with different geographical origins.

Plant growth profiles can be tailored by crossing maritime X continental plants, which we have done with rhododendrons. This incorporates in the new hybrids genes for a "wide climate tolerance," making them useful over a wider climatic range. A rhododendron example is with the continental rhododendron *R. brachycarpum* subsp. *tigerstedtii*. Cox and Cox (1997) called it "the world's hardiest rhododendron," and it

is the hardiest in Mustila and in Minnesota, but it suffers freezing damage year after year at the Milde Arboretum on the Norwegian Atlantic coast and also in many places in New England, USA. However, using *R. brachycarpum* subsp. *tigerstedtii* as a maternal parent growing in Mustila, we have produced plants with wider climatic adaptations. I believe this has occurred in many, but not all, of our hybrids.

Maternal and Epigenetic Effects when Breeding for Hardiness

My first contention is that it is not irrelevant which way you make a cross, even though reciprocals may be different, particularly concerning sensitivity to photoperiod, thermal tolerance and light composition. Extra-chromosomal maternal inheritance involves both chloroplasts (photosynthesis) and mitochondria (energy metabolism). Chloroplasts are maternally inherited, the exception being conifers, and mitochondria are, as far as I know, invariably inherited maternally through the cytoplasm. Obviously then, a mother with outstanding hardiness will pass these structures to her progeny due to cytoplasmic maternal effects.

My second contention involves the concept of "epigenetic landscape." C.H. Waddington, at the University of Edinburgh, defined the concept "epigenetic landscape" in 1942, based on his *Drosophila*-research (Waddington 1953). Basically it means that the "whole genotype" was responsible for phenotypic expression, and can be visualized as a ball running down the genetic "landscape" that is "canalised" to a certain path. His ideas came close to "acquired trait inheritance," a concept that was not then well taken by geneticists around the world, mainly due at that time to T.D. Lysenko's politically biased ideas in the USSR [he rejected Mendelian genetics in favor of his pseudoscientific ideas termed Lysenkoism]. Waddington was a dedicated leftist, as were so many evolutionary geneticists after him, and his efforts to reconcile ideas on the inheritance of acquired characters with modern biology at that time was only "moderately successful."

However, there are plenty of examples of probable epigenetic effects, both before and after Waddington. Fast climatic adaptation, after one generation of a population being transferred to a different climate, in Meadow fescue (*Festuca pratensis*) was documented by Sylvén in Sweden in 1937. McNaughton (1972) found enzyme thermal adaptation in *Typha* sp. [bulrush] and recently a Norwegian research team (Johnsen *et al.* 2005) reported striking influences in progeny hardiness after crosses made with the same mother clones of Norway spruce [*Picea abies*] in north and south Norway—it has been called "The Norway effect." It states that "adaptation (to climate) is influenced by the maternal temperature during zygotic embryogenesis and seed maturation." It suggests a "memory" (genetic) involving DNA-methylation and differential transcription of phytochrome genes. Finally Pembrey *et al.* (2005) reported on the first unequivocal observations of environmental effects in humans that have been passed to later generations.

My conclusion is that maternal and epigenetic effects are both likely in rhododendrons and could be a reason for the superior hardiness in progeny from *R. brachycarpum* subsp. *tigerstedtii* mothers growing at Arboretum Arboretum Mustila. The Norway spruce experiments carried out in Norway should be replicated by hybridizing in rhododendrons. The same clones or cultivars are easily found almost around the globe and should be pollinated with some common batches of pollen.

Enriching the Gene Pool for Hardiness

We have adopted the concept "hybrid plantation" from forest geneticists with some adjustments for rhododendrons. The hybrid plantation has two main purposes:

1) To exhibit the full range of variation that one gets in the F_1 between species and through recombinations in the F_2 and later filial generations. Thus it also serves as a plantation for selecting new hybrids for cultivars. It functions as a wide gene pool for hardiness where non-hardy genotypes are eventually "naturally" eliminated. We were fortunate to have two extremely cold and irregular winters in the 1980s that screened plants in our hybrid plantations.
2) To serve as a focal breeding plantation for the production of new hybrids. An plantation of this kind can be used by breeders for a long time as a "genetic reserve."

Our largest hybrid plantation is located on a pine-mire within the Helsinki city limits. It was established in the 1970s and has become one of the most popular parks in Helsinki. There are information boards telling the public about its purpose as mentioned above. Due to its wide genetic variation, the plantation has become a dynamic park where growth habits, colours and flowering times vary widely, making it perhaps a more interesting park than one based on registered clonal cultivars only. Finally it is a living gene bank and a nucleus for rhododendron biodiversity.

The best hybrids in the plantation become candidates for new cultivars and are placed in clone collections, usually each clone being represented by three to five individuals to ensure adequate comparisons. In some cases clones have been incorporated into the hybrid plantations, but more often they are placed in separate plantations.

At the moment we have named more than 30 new hybrid cultivars and a few more are in the pipeline. We feel that our selection intensity has been high enough, the 30 hybrids having been selected from some 20,000 hybrid plants in the plantations. In our first-round azalea-project, started in the 1980s, some 15,000 hybrid plants were initially planted in the plantations, and first cultivar selections are just now being made. Here we predominantly used *R. luteum* from the Caucasus high altitudes as a source of extreme hardiness.

This first-round breeding programme, started in the 1970s (Tigerstedt and Uosukainen 1996) has created so much positive interest in rhododendrons and

rhododendron breeding that the newly established Finnish Rhododendron Club and its members have managed to hybridize a far larger genetic gene pool in the current second round of hybridizing. The problem now will be to establish large enough hybrid plantations for grow-out of all this new material.

By enriching the gene pool for hardiness, we are now at a stage where hardiness-selection has almost unlimited possibilities. Our dream is to have the new second-round populations spread in hybrid plantations located in different climatic regions. Clearly the outcomes of "natural selection" in different regions would favour genetically different individuals, and thus the programme would be more effectively utilized. We are considering Russia, Canada and the USA for further testing of our rhododendrons.

Future Thoughts

Gene banks, genetic resources and biodiversity have become counterweights to genetic engineering, cloning and genetic uniformity. Modern registered plant cultivars must be uniform, stable and separable from other cultivars.

Hybrid plantations in rhododendrons are living gene banks that can be the basis for unlimited continuation of breeding programmes. In addition they are examples of biodiversity and can become appreciated parks for the general public. In fact, the great success of our hybrid plantations has raised the somewhat frivolous idea that in the face of climatic change and with public acceptance of greater diversity, "hybrid swarms" of promising crosses could be launched as "mixed cultivars," a model used to some extent in agriculture (line mixtures) and in forestry (clonal mixtures and species mixtures).

However, is it possible at an early stage to reduce the number of plants without sacrificing breeding goals? Can young seedlings be screened?

The answer is generally "no" but there may perhaps be reason to discard whole hybrid families on the basis of their poor seed germination, and perhaps in the future, through molecular marker assisted selection. In rhododendrons, the great success in the production of hybrids is due to the ease in producing thousands of seeds of a certain cross. A great cadre of skilled amateur breeders can instigate am economical breeding programme that no plant breeding institute could manage! However, the problems come at the evaluation stage, where large numbers of plants are mandatory to allow for the "picking of the best." Perhaps joint international collaboration is here the solution, as breeding for wide climatic adaptation is an international goal. A "hybrid swarm" cultivation approach (Tigerstedt 1977) should be carefully considered at this time of global climatic change.

References

Chamberlain, D., R. Hyam, G. Argent, G. Fairweather and K.S. Walter. 1996. *The Genus Rhododendron. Its classification and synonymy*. RHS Edinburgh: 181 pp.

Cox, P.A. and N.E. Cox. 1997. *The Encyclopedia of Rhododendron Species*. Glendoick

Publishing. 396 pp.
Hill, J., H.C. Becker and P.M.A. Tigerstedt. 1998. *Quantitative and Ecological Aspects of Plant Breeding.* Chapman & Hall Publishing. 275 pp.
Johnsen, Ø., A.G. Dæhlen, G. Østreng and T. Skrøppa. 2005. Daylength and temperature during seed production interactively affect adaptive performance of *Picea abies* progenies. *New Phytologist* 168: 589-596.
McNaughton. S.J. 1972. Enzymic thermal adaptation: the evolution of homeostasis in plants. *Am. Nat.* 106: 165-172.
Pembrey, M., L.O. Bygren, and G.P. Kaati, 2005. Sex-specific, sperm mediated transgenerational responses in humans. *Eur. J. Hum. Genet.* 14: 159-166.
Sylvén, N. 1937. The influence of climatic conditions on type composition.Bull. Imp. Bur. Pl. Genet. Herb. 21-38.
Tigerstedt, C-G. 1949. Excursion guide for Mustila Arboretum. *Third World Forestry Congress.*
Tigerstedt, P.M.A. 1977. Ecological aspects of adaptation in hybrid swarms of plants. In: pp. 31-40. *Interspecific Hybridization in Plant Breeding.* EUCARPIA, Madrid.
Tigerstedt, P.M.A. 1990. Adaptability of Seed Sources across Geographic Zones – 90 years of experimenting in Finland. *IUFRO papers*, Washington: 322-332.
Tigerstedt, P.M.A. 1994. Adaptation, variation and selection in marginal areas. *Euphytica* 77: 165-169.
Tigerstedt, P.M.A. and M. Uosukainen. 1996. Breeding Cold Hardy Rhododendrons. *J. American Rhodo. Soc.* 50, 4: 185-189.
Waddington, C.H. 1953. Genetic assimilation of an acquired character. *Evolution* 7: 118-126.

Peter Tigerstedt is a member of the Finnish Chapter and Chairman of the Board of the Arboretum Mustila Foundation.

Newly Registered Cultivar Names

Michael Martin Mills
North American Registrar of Plant Names
Philadelphia, Pennsylvania

The following rhododendron and azalea names were approved and added to the International Rhododendron Register before November 8, 2017, by the Royal Horticultural Society, which serves as the International Cultivar Registration Authority for the genus *Rhododendron*. (Information on the registration process follows the descriptions of cultivars.)

Key
(a) – deciduous or evergreen azalea
(r) – elepidote or lepidote rhododendron
(v) – vireya rhododendron
(z) – azaleodendron
X – primary cross
(s) – seed parent of cross, if known
x – cross of an unnamed parent
* – not registered
H – hybridized by
G – grown to first flower by
R – raised by
S – selected by
N – named by
I – introduced commercially by
REG – registered by
Royal Horticultural Society color numbers in parentheses, unless another system is noted

(r) 'Adorable Andrea'
Elepidote rhododendron: 'Ada Lohr' (s) X ('Crest' x 'Evening Glow'). H (2007): H. Edward Reiley, Woodsboro, MD; G (2017): Mary L. Reiley, Woodsboro, MD; N (2017): Andrea Morgan, Fairfield, PA; REG (2017): Reiley Ridge Nursery, Woodsboro, MD. Flrs 12/dome truss, broad funnel, 2 inches (51mm) long x 3.5 inches (90mm) wide with 7 rounded, occasionally emarginate lobes, wavy margins. Bud: light purplish pink (55C), with pale greenish yellow (9D) at base. Inside: very pale purple (73D), with light yellow green (154D) throat and brilliant yellow green (154B) spots on dorsal

lobe. Outside: very light purple (75C) shading to yellowish white (155B) at margins. Cream stamens, yellowish style, green stigma. Truss 4.5 inches (114mm) high x 6 inches (152mm) wide. Lvs 3.5 x 2.25 inches (114 x 57mm), oblong, upangled from midvein, rounded base, obtuse apex, flat margins, moderate olive green (137A), semiglossy. Shrub 2 feet (0.6m) high x 1.25 feet (0.4m) wide in 8 years, open habit, lvs held 2 growing seasons. Hardy to 5°F (-15°C), heat tolerant to 90°F (32°C). Flowering midseason (early May northern Maryland). Etymology of name: incorporating the first name of the namer, a granddaughter of the hybridizer.

'Adorable Andrea'. Photo by Mary Reiley.

(r) 'Elmer's Gift'

Elepidote rhododendron: parentage unknown. G (1970s): Elmer Morris, Jackson, NJ; S (2017), REG (2017): Percival B. Moser III, Bryn Mawr, PA, & Karel F. Bernady, Chester Springs, PA; N (2017): Karel F. Bernady. Flrs 11-12/ball truss, funnel, 2 inches (51mm) long x 3.5 inches (90mm) wide with 5 broadly acute lobes, frilly margins. Bud: vivid purplish pink (N66B). Inside: moderate purplish

'Elmer's Gift'. Photo by Percival Moser.

pink (68C) at margins blending to yellowish white (NN155A) in center of lobes, with short strong greenish yellow (151B) dorsal basal flare. Outside: deep purplish pink (N66C). Calyx: 0.25 inch (6mm) long, strong greenish yellow (143B). Fragrance: light. Truss 6 inches (152mm) high x 5-6 inches (127-152mm) wide. Lvs 4-6 x 2-2.5 inches (102-152 x 51-64mm), elliptic, oblique base, broadly acute apex, flat margins, grayish olive green (NN137B), semiglossy. Shrub 8 x 8 feet (2.4 x 2.4m) in 15 years; intermediate habit. Hardy to -5°F (-21°C), heat tolerant to 95°F (35°C). Flowering midseason (May in Philadelphia area). Etymology of name: for Elmer Morris, of Jackson, NJ, who grew it from seed and made a gift of it.

(a) 'Flurry'

Evergreen azalea: ('Maruschka' x 'Florence Waldman') (s) X 'Festive'. H (2004), G (2006), N (2017), REG (2017): Joe Klimavicz, Vienna, VA. Flrs 2-3/terminal, saucer (outer corolla), semi- to fully double, 1.2 inches (30mm) long x 2.4 inches (60mm) wide with c. 15 lobes, some rounded, some broadly acute, flat margins. Bud, inside and outside: white, with vivid purplish red (57D) sectors and flecks; occasional faint yellow-green interior spotting toward base of some

'Flurry'. Photo by Joseph Klimavicz.

dorsal lobes. Occasional vivid purplish red (57D) flowers with deep to moderate purplish pink (66C-D) sectors. Calyx: 0.2 inch (5mm long), strong yellow green (144C). Stamens absent or few. Lvs 1.2 x 0.6 inches (30 x 15mm), elliptic, cuneate base, broadly acute apex, flat margins, moderate olive green (146A), semiglossy. Shrub 3 x 3 feet (0.9 x 0.9m) in 10 years, intermediate habit. Hardy to 0°F (-18°C), heat tolerant to 110°F (43°C). Flowering midseason (early May in Washington, D.C., area). Etymology of name: naming rights acquired by Ginger and Sam Burd in an auction at the May 2016 joint convention of the Azalea Society of America and the American Rhododendron Society; their grandson came up with the name for them. Synonym: hybridizer's number MV-04-39.

(a) 'Harvey Cotten'

Deciduous azalea: *R. flammeum* (s) open-pollinated (likely x *R. canescens*). Seed harvested (2006), G (2010): Vernon Bush, Huntsville, AL; N (2017), REG (2017): Huntsville Madison County Botanical Garden Society Inc., Huntsville, AL; I (post-2017): Earl Sommerville, Marietta, GA. Flrs 10-15/single-bud dome truss, tubular funnel, 1.75 inches (44mm) long x 1.2 inches (30mm) wide with 5 rounded, reflexed lobes, wavy margins.

'Harvey Cotten'. Photo by Tracy Cook.

Bud: strong purplish red (58B). Inside and outside: strong purplish pink (63C) with upper two-thirds of interior dorsal lobe brilliant yellow (15C), whitish hairs on tube. Pistil & stamens significantly exerted; pistil 2 inches (50mm), stamens slightly shorter; style and filaments reddish, anthers yellow, stigma green. Fragrance: moderate. Truss 2.5-3 inches (64-76mm) high x 3.5-4 inches (90-102mm) wide. Lvs 3.5 x 1 inches (90 x 25mm), lanceolate, cuneate base, acute apex, flat margins, moderate olive green (147A), matte. Indumentum: sparse hairs above and below, increasing toward margin above, and on petiole and softwood twigs; whitish maturing to cream, on twigs maturing to cinnamon. Shrub 2.8 feet (0.9m) high x 2.9 feet (0.9m) wide in 7 years; intermediate habit. Hardy to 4°F (-16°C), heat tolerant to 94°F (34°C). Flowering midseason (mid-April in northern AL). Etymology of name: for John Harvey Cotten, former vice president of horticulture, Huntsville Madison County Botanical Garden Society Inc.

(r) 'Jeff's Lucidity'

Elepidote rhododendron: 'Scintillation' (s) X ('Brookville' x 'Mary Garrison'). H (2006): H. Edward Reiley, Woodsboro, MD; G (2016): Mary L. Reiley, Woodsboro, MD; N (2017): Jeffrey C. Reiley, Woodsboro, MD; REG (2017): Reiley Ridge Nursery, Woodsboro, MD. Flrs 9-13/ball truss, broad funnel to saucer, 2.1 inches (53mm) long x 3.9 inches (100mm) wide with 5-7 rounded, largely dissected lobes, wavy margins. Bud: deep pink (51C). Inside: very pale purple

'Jeff's Lucidity'. Photo by Mary Reiley.

(76D), with light yellow (11B) in throat and center of upper lobe and moderate red (47A) spots in upper lobe. Outside: very pale purple (76D), with pale purplish pink (56A) veins. Cream stamens, yellow-green style, brown stigma. Fragrance: light. Truss 4.25 inches (108mm) high x 6 inches (152mm) wide. Lvs 3.1 x 1.25 inches (79 x 32mm), elliptic, rounded base, broadly acute apex, flat margins, moderate olive green (146A), semiglossy. Shrub 4.3 feet (1.3m) high x 3 feet (0.9m) wide in 10 years; intermediate habit, lvs held 2 growing seasons. Hardy to 5°F (-15°C), heat tolerant to 90°F (32°C). Flowering midseason (May in northern Maryland). Etymology of name: incorporating the nickname of the namer, a grandson of the hybridizer.

(r) 'Jordan's Jubilee'

Elepidote rhododendron: 'Ada Lohr' (s) X ('Crest' x 'Evening Glow'). H (2007): H. Edward Reiley, Woodsboro, MD; G (2017): Mary L. Reiley, Woodsboro, MD; N (2017): Jordan Westplate, Milwaukee, WI; REG (2017): Reiley Ridge Nursery, Woodsboro, MD. Flrs 12-15/ conical truss, broad funnel, 2 inches (51mm) long x 3.25 inches (83mm) wide with 6-7 rounded, emarginate lobes, wavy margins. Bud: moderate purplish pink (68C) with pale yellow (11C) base. Inside: very pale purple (75D); with moderate orange (170B) spots and dorsal flare from base, spots superimposed on light greenish yellow (8C). Outside: very light purple (75C). Whitish stamens, long

'Jordan's Jubilee'. Photo by Mary Reiley.

green pistil. Truss 5.25 inches (133mm) high x 6 inches (152mm) wide. Lvs 3.25 x 1.25 inches (83 x 32mm), oblong, rounded base, obtuse apex, flat margins, moderate olive green (146A), semiglossy. Shrub 2.25 x 2.25 feet (0.7 x 0.7m) in 8 years, open habit. Hardy to 5°F (-15°C), heat tolerant to 90°F (32°C). Flowering midseason (early May in northern Maryland). Etymology of name: incorporating the first name of the namer, a granddaughter of the bybridizer.

(r) 'Joyous Jillian'

Elepidote rhododendron: 'Apricot Fantasy' (s) X ('Crest' x 'Evening Glow'). H (2007): H. Edward Reiley, Woodsboro, MD; G (2017): Mary L. Reiley, Woodsboro, MD; N (2017): Jillian Westplate, Minneapolis, MN; REG (2017): Reiley Ridge Nursery, Woodsboro, MD. Flrs 11-13/dome truss, broad funnel, 2 inches (51mm) long x 3.5 inches (90mm) wide with 5 rounded lobes, wavy margins. Bud: strong purplish pink (55B) with pale purplish pink (55D) veins. Inside and outside: pale purplish pink (56C) blending to pale purplish pink (56A) at margins, with light greenish yellow (8C) interior blotch below dorsal lobe. Whitish stamens and style, green stigma. Truss 3.75 inches (95mm) high x 6 inches (152mm) wide. Lvs 4.25 x 1.8 inches (108 x 47mm), oblong, rounded base, broadly acute apex, wavy margins, dark green (136A), semiglossy. Shrub

'Joyous Jillian'. Photo by Mary Reiley.

2.8 feet (0.9m) high x 2.5 feet (0.8m) wide in 8 years, open habit, lvs held 2 growing seasons. Hardy to 5°F (-15°C), heat tolerant to 90°F (32°C). Flowering midseason (early May in northern Maryland). Etymology of name: incorporating the first name of the namer, a granddaughter of the hybridizer.

(r) 'Kasie Marie'

'Kasie Marie'. Photo by Richard Jones.

Lepidote rhododendron: 'Butterhorn' (s) X 'Patricia Marie'. H (2008), G (2014), N (2017), REG (2017): Phillip G. Johnson, Fort Bragg, CA. Flrs 3-5/lax truss, funnel, prominent exterior midribs giving fluted aspect, 3.75 inches (95mm) long x 4 inches (102mm) wide with 5 rounded lobes, each recurved on both sides giving acute appearance. Bud: strong yellow green (144C). Inside and outside: light greenish yellow (7D); prominent vivid yellow (14A) interior throat extending to margin at juncture of lobes. Calyx: 0.75 inch (19mm) long, strong yellow green (144C), greener at base. Yellow filaments and style, brown anthers, light green stigma. Fragrance: strong. Truss 4 inches (102mm) high x 8 inches (203mm) wide. Lvs 4 x 1.5 inches (102 x 38mm), oblanceolate, cuneate base, broadly acute apex, downcurved margins, moderate olive green (147A),

semiglossy. Indumentum: scales, underside and petiole, brown. Shrub 5 feet (1.5m) high x 3.5 feet (1.1m) wide in 8 years; dense habit. Plant hardy to 20°F (-7°C), buds to 38°F (3°C). Flowering midseason (mid-May in coastal northern CA). Etymology of name: for Kasie Marie Johnson-Bradshaw, a daughter of the hybridizer.

(r) 'Livia's Love'

'Livia's Love'. Photo by Donna Delano.

Elepidote rhododendron: parentage unknown. H (c. 1970), G (1970s): John C. Cowles, Stowe, MA; N (2013): Linda Calmes Jones, Sandwich, MA; REG (2017): Heritage Museums & Gardens, Sandwich, MA. Flrs 16/ball truss, broad funnel, 1.75 inches (45mm) long x 2.75 inches (70mm) wide with 5 wavy-margin lobes. Bud: vivid reddish purple (N74A). Inside: strong reddish purple (70B) at margins blending to near white in center with two small, basal, brilliant yellow green (149A) flares corresponding to dorsal lobe. Outside: strong reddish purple (70B). Calyx: negligible. Whitish stamens, whitish style with green below reddish stigma, pistil 2 inches (51mm) long. Truss 7 inches (178mm) high x 6 inches (152mm) wide. Lvs 5.5 x 2 inches (140 x

51mm), elliptic, rounded base, broadly acute apex, flat margins, moderate olive green (137A), matte. Shrub 12 x 12 feet (3.7 x 3.7m) in 40 years; intermediate habit, lvs held 2 growing seasons. Hardy to 0°F (-18°C). Flowering midseason. Etymology of name: for Livia Panagini, mother of the namer.

(r) 'Mister Blue'

Lepidote rhododendron: selection of *R. augustinii*. G (1939), S: Joseph B. Gable, Stewartstown, PA; N (2017), REG (2017): Michael Martin Mills, Philadelphia, PA. Flrs 3-4/dome truss, funnel, 1.5 inches (38mm) long x 2 inches (51mm) wide with 5 broad acute lobes, flat margins. Bud: light purple (N82C). Inside: light purple (N82D) blending to very pale purple (76C) at throat with light purple (N82D) midvein, two rays of strong greenish yellow (151B) spots extending from throat below upper lobe. Outside: light purple (N82D). Strong purplish pink (55B) pistil, 2 inches (51mm) long, extending 0.75 inch (19mm) beyond corolla; pale cream stamens. Truss 2 inches (51mm) high x 3 inches (76mm) wide. Lvs

'Mister Blue'. Photo by Michael Mills.

2.75 x 0.9 inches (70 x 22mm), elliptic, cuneate base, acute apex, flat margins, grayish olive green (NN137B), matte. Indumentum: scales below, 0.05-inch (1mm) white hairs on underside midrib and petiole. Shrub 5.5 feet (1.7m) high x 2.75 feet (0.8m) wide in 8 years; intermediate habit, lvs held 2 growing seasons. Hardy to -5°F (-21°C), heat tolerant to 95°F (35°C). Flowering early season (mid-April in Philadelphia area). Etymology of name: for Randy Dalton, grandnephew of Joseph B. Gable and life partner of the registrant, using a moniker he adopted as part of his campaign to support the arts. Note: seed supplied to Gable by Magor of St. Tudy, England, and sown in 1932. Synonym: informally propagated and circulated as "Gable's hardy augustinii" through the years.

(r) 'Sally Moser'

Elepidote rhododendron: 'Ruth Davis' (s) X 'Dexter's Peppermint'. H (2010), G (2015), N (2017), REG (2017): Percival B. Moser III, Bryn Mawr, PA. Flrs 7-8/ dome truss, funnel, 2 inches (51mm) long x 2.5 inches (64mm) wide with 5 rounded lobes, wavy margins. Bud: deep purplish pink (N57C). Inside: white (NN155D) with strong yellow (N144B) in dorsal area of throat. Outside: opening pink-tinged, fading promptly to white

'Sally Moser'. Photo by Percival Moser.

(NN155D). Calyx: 0.4 inch (9mm) long, strong yellow green (N144A). Truss 4 inches (102mm) high x 5.5 inches (140mm) wide. Lvs 5.25 x 2-2.5 inches (133 x 51-64mm), elliptic, rounded base, broadly acute apex, flat margins, moderate olive green (146A), semiglossy. Shrub 3 x 3 feet (0.9 x 0.9m) in 7 years; intermediate habit. Hardy to -5°F (-21°C), heat tolerant to 95°F (29°C). Flowering midseason (early May in Philadelphia area. Etymology of name: for the hybridizer's wife.

(r) 'Shari Eileen Kenyon'
Elepidote rhododendron: 'Jonathan Shaw' (s) X 'Purple Amethyst'. H (2002) Jim Barlup, Bellevue, WA; S (2016), G (2007), N (2016), REG (2017): John Winberg, Burlington, WA. Flrs 15/ball truss, broad funnel, 1.6 inches (41mm) long x 2.5 inches (64mm) wide with 5 frilly-margin lobes. Bud: deep purplish red (61A). Inside: moderate purplish pink (78D) shading to strong reddish purple (78B) at margins, with dark purple (79A) dorsal flare. Outside: strong reddish purple (78B) with vivid reddish purple (78A) midveins. Truss 4 inches (102mm) high x 4.5 inches (114mm) wide. Lvs 4.5 x 1.75 inches (114 x 44mm), elliptic, rounded base, broadly acute apex, flat margins, moderate olive green (147A), semiglossy. Shrub 3 feet (0.9m) high x 4 feet (1.2m) wide in 14 years; intermediate habit. Hardy to 5°F (-15°C). Flowering midseason (early May in Seattle area). Etymology of name: for a health service professional from Covington, WA.

(r) 'Vera Fitzpatrick'
Elepidote rhododendron: 'Burgundy Mist' (s) X 'Holli's Hope'. H (2004): Jim Barlup,

Bellevue, WA; G (2009), S (2016), N (2017), REG (2017): John Winberg, Burlington, WA. Flrs 11/ball truss, broad funnel, 1.8 inches (47mm) long x 2.5 inches (64mm) wide with 5 frilly-margin lobes. Bud: deep reddish purple (77A). Inside and outside: deep purplish pink (72D blending to strong pink (82B) at margins, inside with twin deep red (185A) spotted dorsal flares beginning at base. Truss 3.5 inches (90mm) high x 4.5 inches (114mm) wide. Lvs 5 x 2.25 inches (127 x 57mm), elliptic, rounded base, broadly acute apex, downcurved margins, moderate olive green (147A), semiglossy. Shrub 2 feet (0.6m) high x 3 feet (0.9m) wide in 12 years, open habit. Hardy to 5°F (-15°C). Flowering midseason (early May in Seattle area). Etymology of name: For Vera Fitzpatrick of Issaquah, WA, a friend of an acquaintance of the hybridizer and the registrant.

References

Names conform to the rules and recommendations of the *International Code of Nomenclature for Cultivated Plants, Eighth Edition* (2009). Color names are from *A*

Contribution Toward Standardization of Color Names in Horticulture, R.D. Huse and K. L. Kelly; D. H. Voss, editor (ARS, 1984).

To register a rhododendron or azalea name

North Americans: Electronic regi-stration may be submitted at www.rhododendron.org/plantregistry.htm. The site also provides instructions and forms for downloading and completing manually. Those submitting paper applications should use only the current form (revised 2015). The quickest way to obtain paper forms is to ask a friend with Internet access to go to the ARS website and print the form and instructions. Questions, completed paper forms, all photographs and requests for paper forms should be directed to Michael Martin Mills, North American Registrar. There is no fee.

All others: Please direct inquiries to Alan C. Leslie, International Rhododendron Registrar.

SINCE 1929
Espoma
ORGANIC

WHEN YOU USE THE ORIGINAL, IT SHOWS.

More Blooms • Stronger Roots • Faster Growth

Four Generations of Organic Gardening Expertise.

Holly-tone®, the original acid loving plant food, provides spectacular results for all types of evergreens. Made from all natural ingredients and beneficial microbes, Holly-tone grows beautiful azaleas, eye-popping rhododendron, tasty blueberries and more. Simple to use and safe for children and pets, it's no wonder that Holly-tone has been the #1 acid-loving plant food for over 71 years!

Espoma. A natural in the garden since 1929.

Visit us at: www.espoma.com for inspirational ideas and organic growing tips