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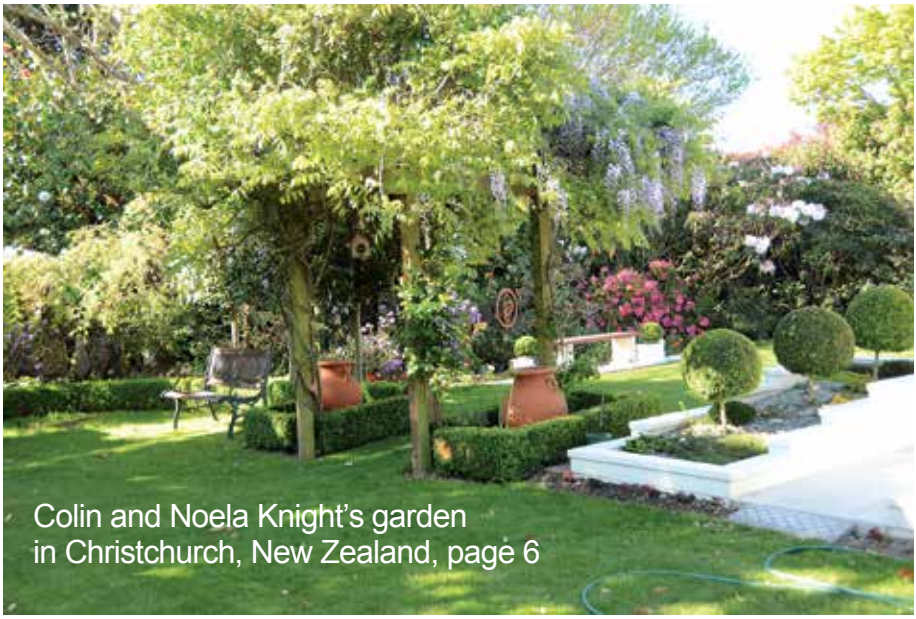

Colin and Noela Knight's garden
in Christchurch, New Zealand, page 6

American Rhododendron Society
A GUIDE TO THE SOCIETY

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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 Executive Director 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.**



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Cover Photo

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Colin and Noela Knight's garden in Christchurch, New Zealand. Photo by Glen Jamieson.

Society News

Publications

ARS Digital
Website: http://www.rhododendron.org
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Plant Name Registration: http://www.rhododendron.org/plantregistry.htm
Rhododendron & Azalea News: http://www.rhododendron.org/news/newsindex.htm

From the President

Bob MacIntyre
Bandon, Oregon

Reflecting back on 2015, it was a year of both achievement and change, with two successful conferences and the beginning of a change in ARS administration.

Laura Grant, Executive Director, will be retiring at the completion of the Annual Meeting in 2016. This transition represents an opportunity to evaluate how the ARS functions and how best to move forward. A Transition Team, led by Ann Mangels, has been formed to handle this task, and its members are working hard to develop Board of Directors (BOD) recommendations for both replacement personnel and how to streamline operational processes for our Society.

Our web master, Bob Weisman, has also been busy, having developed an entirely new, updated public ARS website. I encourage you to check out www.rhododendron.org and take a virtual tour of our Society. Thank you Bob and all the others involved for your significant achievement.

Gordon Wylie and Bud Gehnrich have been working hard to review the Policies of the Board and will shortly be bringing recommended revisions to the attention of the BOD. Thank you both too for all your hard work.

Finally, there is a topic that nobody wants to hear or talk about, but which is vital to our existence as an organization, namely our Society's financial state. Although the ARS is a 501(c)3 organization that is largely managed by unpaid volunteers, it still needs funds to operate and to provide the services and programs you expect. Of the $40/year dues paid by each member, $30 goes to the national organization, but It costs the organization $46 per member to provide office support and the journal. This currently represents a deficit of $16 per member per year. This means our expenses are exceeding our income. Much time and effort is going into cutting expenses but one can only cut so much before there is a change in quality of service. Our past experience has shown that raising dues can have an overall negative impact on income, with any potential dollar benefit more than offset by a loss in membership.

Non-profit organizations like the ARS often depend on grants, donations and volunteers to survive and grow, as annual dues at most generally only cover operating expenses. The committee position of Chair of Fund Raising, a position particularly important to our Society's well being, is currently vacant. We very much need someone with fund raising experience and/or grant application experience to come forward and volunteer to fill this position. A goal for 2016 is to develop both an active Fund Raising Campaign and an active grant application process. If you can help in either of these areas please, please contact me or your district director.

From the Executive Director

Laura Grant
Toronto, Ontario
Canada

It is with mixed emotions that I write this column. I am retiring. The annual Convention April 2016 in Williamsburg, VA, will be my last official function in the capacity as Executive Director.

Since August 2004, when I assumed this position, I have been privileged in getting to know some of the most wonderful people in the world of rhododendrons and azaleas, many of whom will be my friends for life.

I leave this position with the feeling that our Society will remain vibrant and healthy for years to come. I come to this conclusion from the personal experience as Executive Director of the Society working with a dedicated leadership as well as my view of demographics. The baby boomer generation, focused on personal health and the health of our planet, will come to realise the value of gardening in physical and mental well-being. Our role is to demonstrate that growing rhododendrons and azaleas is, as we all know, a rewarding "quality of life" activity. Help them experience the satisfaction in beautifying their landscapes with them, and perhaps even the thrill of developing a new colour or superior or unique plant.

But what is foremost on my mind right now, is a heartfelt appreciation for all the help and the support from my rhody family, your sharing of knowledge, plants and above all your friendship.

Editor's Note:

This on-line JARS issue has some significant differences from previous on-line issues, as listed below, and these differences will apply to all future on-line JARS issues:

1) Because page numbering of articles, society news items, etc., are different between the printed and on-line versions of the same *JARS* issue, content in Errata and reference to specific pages in the issue will in the future be different but accurate only for each JARS version.

2) For some articles, the on-line version will have more images than the comparable printed version, as it doesn't cost any more to have more colour images in the on-line JARS. In contrast, colour pages in the printed version are relatively costly and so are limited in number. In this issue the first two articles on New Zealand gardens have substantially more images in the on-line version of the winter issue.

3) There are many references to hybrid rhododendrons in *JARS* but few descriptions of species. I am therefore going to include brief descriptions of rhodo species particularly worthy of cultivation, including photos of what makes them so worthy, such as their flowers, fragrance, fall colour, bark, indumentum, and so on. This issue only has one species described, but I am hoping to include more in future issues, and would welcome submissions by ARS members in this regard. Again, inclusion of this additional educational material is possible because it does not add to the cost of the on-line *JARS*, whereas it would in the printed *JARS* version.

New Zealand's South Island and the 70th International New Zealand Rhododendron Conference, Dunedin, October 2014

Glen Jamieson
Parksville, BC, Canada

Photos by the author

In October 2014, the New Zealand Rhododendron Association had its 70th anniversary, as did the American Rhododendron Society this past spring. Along with 32 other ARS members (see a brief summary in online *JARS* 69(1), p. 53), some of whom live in New Zealand, my wife Dorothy and I attended, and had a wonderful time. In this article I summarise our experience in more detail, and describe and show images of some of the amazing gardens we saw. This article will

Fig. 1. A map of South Island, NZ, showing some of the place names mentioned in the text. Google earth map.

Fig. 2. Colin and Noela Knight's garden in Christchurch.

focus only on South Island (Fig. 1), as the pre-conference tour experience on North Island is being summarized in another article by Linda Derkach (p. 22).

The conference lasted five busy days, but to give us a better feeling of South Island, we spent an additional two weeks travelling around the island, ten days in a camper and the balance staying with our wonderful hosts, Colin and Noela Knight, in Christchurch, about 361 km (224 miles) north of Dunedin. I will summarise a few of our touring highlights at the end of this article, as South Island is an amazing place with many diverse habitats.

In keeping with its international focus, the meeting had two international speakers: Hartwig Schepker, who gave two talks, one about his plant explorations in Arunachal Pradesh, India, and the other about rhododendron cultivation and preservation in Germany; and Steve Hootman, who gave highlights of his 20 years of exploring for rhododendrons in the wild. In addition, Neville Peat talked about the ecology around Dunedin, Denis Hughes about hybridizing rhodos, and Lynn Bublitz about Maddenia in New Zealand. The real highlights for me, though, was seeing New Zealand gardens, not just on the conference tours but also in Christchurch and at other locations. What made them particularly interesting to me was the mixing in most gardens of native New Zealand plants with temperate rhododendrons (South Island is too cold for vireyas outside all year round, so they grow outside only on the North Island) and the perennials and annuals cultivated basically world-wide.

We flew form Canada through Auckland into Christchurch, so the first garden we

Fig. 3. The Ilam Garden at the University of Canterbury, Christchurch.

saw was that of our hosts, the Knights. Being spring in October in the Southern Hemisphere, there were flowering cherries, wisteria, rhodos, and many spring flowering bulbs in a compact, well-arranged display (Fig. 2). One plant that particularly intrigued us was *Wisteria* 'Lavender Lace', as it both flowered before it leaved, making a more spectacular display, and was also very fragrant. We then visited Ilam Gardens at the University of Canterbury, where there were magnificent displays of both rhododendrons and azaleas. Ilam was named by Charles Watts-Russell (1826-75), a NZ Legislative Councilor and the property's first owner, after his family home in Staffordshire, England, but it was Edgar Fraser Stead that introduced rhodos and azaleas to the property in the early 20th century. In 1925, Lionel de Rothschild, Gerald Loder and other British rhodo growers gave him a large collection of rhododendrons, and from these 520 plants, he began an extensive breeding programme that

Fig. 4. Walkway at the Ilam Garden at the University of Canterbury, Christchurch.

Fig. 5. Alan Trott's garden at Ashburton.

Fig. 6. Alan Trott's garden at Ashburton.

produced thousands of plants. The Stead property was bought by the government in 1950 as a new site for the University of Canterbury, with the condition that that the gardens (Figs. 3, 4) be maintained for perpetuity.

Driving south from Christchurch to Dunedin, the site of the conference, we visited Alan Trott's garden at Ashburton, designated by the NZ Garden Trust as a Garden of National Significance. It is a large show garden and even has its own chapel for weddings! Its woodland area was developed around a series of gently curving paths, and later, the water gardens were added and finally the English-inspired formal gardens. The layout is such that garden areas while integrated still contain elements of surprise as the visitor explores (Figs. 5, 6).

We then proceeded to Dunedin and the conference, where

eleven gardens had been selected for touring over four days. The first visited was Tannock Glen, which is maintained by the Dunedin Rhododendron Group. Dunedin has many hills, and many of the gardens visited were established on slopes with interesting views across either the city or the surrounding countryside. Tannock Glen, built up since 1975, has many rhododendron species and hybrids (Figs. 7-9) planted around mature magnolias, flowering cherries, maples and oaks, among others.

Fig. 7. Tannock Glen, maintained by the Dunedin Rhododendron Group.

Fig. 8. *R.* 'Lemon Lodge'. Tannock Glen.

Fig. 9. *R.* 'Beauty of Littleworth'. Tannock Glen.

We then visited the Dunedin Botanic Garden, established in 1863, making it the oldest public garden in the country and one of only five New Zealand gardens to be designated by the NZ Garden Trust as a Garden of International Significance. The flat lower garden has a semi-formal character, with a camellia collection, herbaceous borders, a pond, and rose, herb, Edwardian winter and rock gardens. The garden extends uphill, with Mediterranean and South African gardens linking the lower and upper gardens, with the latter having a native plant section and the 100-year-old Rhododendron Dell. The Dell is a four ha (9.9 acre) woodland garden with an extensive collection of both species

Fig. 10. The Dunedin Botanic Garden.

Fig. 11. *R.* 'Mrs W.T. Thistleton-Dwyer' at the Dunedin Botanic Garden.

Fig. 12. The Dunedin Botanic Garden.

Fig. 13. Gunnera, tree fern and rhododendrons. Dunedin Botanic Garden.

and hybrid rhododendrons (Figs. 10-14) intermixed with native plants such as tree ferns.

There were a number of private gardens visited, including Bron and Tony Fitchett's "Lindenfield" (Fig. 15), Gretchen and John Henderson's "Kanuka Ridge" (Fig. 16), Patti and John Matheson's garden on Maori Hill (Figs. 17-18), and Evelyn and Trevor Millar's "Ashburn Garden" (Figs. 19-20). Each garden had its own distinctive style and unique features. Lindenfield is a 3.4 ha (8.5 acre) woodland garden with a beau-

Fig. 14. *R.* 'Kiwi Magic'. Dunedin Botanic Garden.

tiful curved *Prunus serrulata* 'Shimidsu Sakura'-lined walkway (Fig. 15) and many large-leaved rhodos and Maddenia planted on a steep slope overlooking the city. Kanuka Ridge is a newer garden with a focus on garden design and colour and texture schemes (Fig. 16). The Matheson garden is an inner-city garden on the steep slopes overlooking a small creek, with many tree ferns and tall Wellingtonias (Figs. 17, 18); the latter are the NZ name for *Sequoiadendron giganteum,* North America's Giant Sequoia. These trees in England were given this name after the death of the 1st Duke of Wellington in 1852, as a commemoration. There were many azaleas, larger rhododendrons, and a pleasing mix of spring bulbs, smaller rhodos, primulas, hostas and other herbaceous plants below the house.

Fig. 15. Lindenfield's beautiful curved *Prunus serrulata* 'Shimidsu Sakura'-lined walkway.

Fig. 16. *Echium candicans* 'Pride of Maderia. Kanuka Ridge.

The two final gardens I will mention were spectacular—the garden around Larnach Castle and Glenfalloch. Larnach Castle (Fig. 21) was built during the 1870s by William Larnach on 14.2 ha (35 acres) on the Otago Peninsula ridge, but became neglected during the mid-20th century. Bought by Margaret and the late Barry Barker in 1967, both the house and garden have been restored, with a new garden, including a native plant garden, developed in the footprint of the old layout. An axis was created from the Castle to the view and the surrounding formal landscaping

Fig. 17. Patti and John Matheson's garden, showing the tall Wellingtonias, the NZ name for *Sequoiadendron giganteum,* North America's Giant Sequoia.

Fig. 18. Patti and John Matheson's garden.

Fig. 19. Ashburn. Garden of Evelyn and Trevor Millar. Dunedin.

Fig. 20. Ashburn. Garden of Evelyn and Trevor Millar. Dunedin.

Fig. 21. Larnach Castle.

Fig. 22. The South Seas Garden at Larnach Castle overlooking Otago Harbour.

Fig. 23. Kaka beak (*Clianthus maximus*). Larnach Castle.

Fig. 24. Molded heathers. Larnach Castle.

Fig. 25. South Seas Garden. Larnach Castle.

Figs. 26. Glenfalloch.

Figs. 27. Tree houseleek (*Aeonium arboreum*). Glenfalloch.

Figs. 28. Kowhai (*Sophora tetraptera*). Glenfalloch.

Figs. 29. Glenfalloch.

established in the 1990s. The Castle is on the top of the ridge, and a view to the sea was established on the north slope, where a South Seas garden (Fig. 22) is now located. Some garden plants and designs are in Figs. 23-25.

Glenfalloch (Gaelic for "hidden valley") Woodland Garden is a tranquil garden of four seasons also on the Otago Peninsula, only a 15-minute drive from downtown Dunedin, and is also a NZ Garden of National Significance. In the spring, there is an amazing display of flowering bulbs, rhododendrons, azaleas, flowering cherries, magnolias, fuchsias, primulas, ferns and hostas (Figs. 26-29). Established by George Russel in 1871, it was purchased in 1917 by Phillip Barling who organised the planting of the many rhododendrons. It was opened to the public in 1956 and in 1968, the Otago Peninsula Trust was founded and funds raised to buy the property, making it New Zealand's first conservation trust to ensure that public access was retained for the good of both the city and visitors. As with Larnach Castle, native plants including native ferns, Kowhai (*Sophora microphylla*), and cordylines are interspersed throughout the plantings.

In summary, the conference was very well organised, local hospitality was amazing and the choice of tour gardens was exceptional. A total of 34 American Rhododendron Society members attended (see printed *JARS* 69: 27; online *JARS* 69:53), with total attendance of 230 from eight countries. We very much enjoyed our time on South Island, and while we didn't visit the North Island this trip, having been previously, I strongly encourage others to visit New Zealand and see their great gardens on both islands!

Fig. 30. Lake Pukaki and Mount Cook.

Fig. 31. Milford Sound.

Finally, no mention of NZ's South Island would be complete without describing some of the island's spectacular natural features, which we visited as we drove over 3500 km (2175 miles) in a rental camper. Aoraki/Mount Cook (Fig. 30), the highest mountain in New Zealand at 3724 m (12,218 ft), lies in the Southern Alps, the mountain range which runs the length of South Island. This is the mountain that Sir Edmund Hillary practiced climbing on before ascending Mt. Everest in 1953.

Fig. 32. Whitebait.

Milford Sound, a 15 km (9.3 mile) fjord in southwestern South Island and NZ's most famous tourist destination, is surrounded by sheer rock faces that rise 1200 m (3900 ft) or more on either side (Fig. 31). With a mean annual rainfall of 6813 mm (268 in), it is the wettest inhabited place in New Zealand.

On something not at all related to gardening, what really surprised me though was being a fisheries scientist, I looked forward to seeing a wide diversity of local fish and shellfish fished around South Island's beaches. While there are major offshore fisheries, the only nearshore fishing I observed as we drove around most of the island was for whitebait, and this occurred in virtually every river and creek flowing into the sea. This is a general term used in many countries to describe small freshwater fish that are tender and edible, and in New Zealand, it describes the juvenile forms (Fig. 32) around 4–5 cm (1.6-2 in) long) of five species of the fish family Galaxiidae.

In spring, whitebait make their way upstream from the sea, swimming near the river's edge, where they are caught in the thousands by fixed conical nets facing downstream. Those that escape the nets mature in freshwater, and in the fall, the adults move downstream into estuaries to spawn. The larvae hatch and then live in the sea until the next spring, when they move back into freshwater as juveniles. In 2014, whitebait sold for about $NZ 150/kg ($US 46/lb), and whole fish are typically eaten in omelets or are deep-fried. I was fortunate enough to be invited to both fish for them (it's a passive operation—once the net is deployed, you socialize and drink beer on shore for hours until it is hauled in!) and consume them, which along with beer and other drinks, makes for a great party when camping!

Glen Jamieson is editor of JARS and a member of the Mount Arrowsmith Chapter.

New Zealand's North Island and the 70th Anniversary Preconference Rhododendron Tour

Linda Derkach
Qualicum Beach, BC
Canada

Photos by the author

For many of us residing in the northern hemisphere, the lure of New Zealand holds much appeal—beautiful scenery, fascinating cultures, a step back in time—or so they say. But no travel book can prepare one for the pristine beauty, tranquil countryside, friendly people and magnificent gardens that lie within the islands of this southern jewel.

And thus, a seven-day pre-conference tour of NZ gardens before the five-day 70th anniversary NZ Rhododendron Conference in Dunedin followed by a three-day post-conference tour was just too delicious to pass up for this passionate gardener and plants person. And the fact that there are no snakes, no bears and no crocodiles

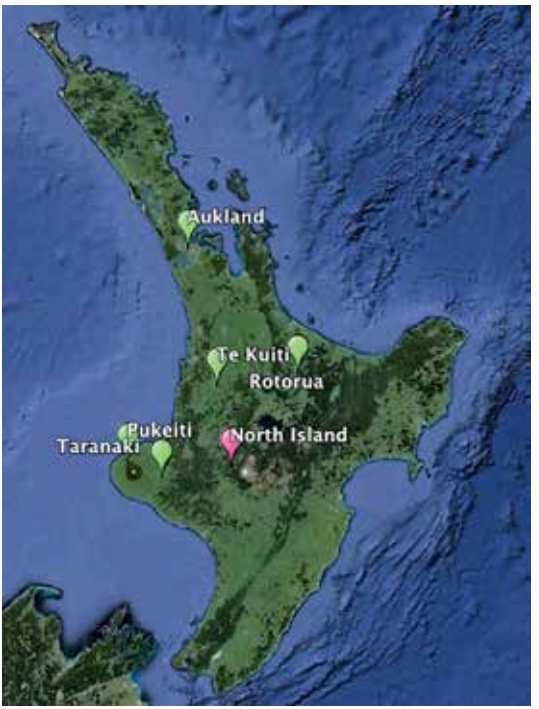

Fig. 1: Places visited on the North Island, New Zealand. Google Earth map.

in NZ made it even more enticing. This article complements Jamieson (pp. 5-21), which describes South Island gardens visited in Christchurch, Ashburton and on the conference tours.

Fig. 2 Totara Waters.

After a day exploring Auckland (Fig. 1), our little band of 20 rhododendron enthusiasts and ARS members from four continents, along with our intrepid, knowledgeable and thoroughly likeable guide Richard Nanson, began the process of bonding with our visit to Totara Waters (Figs. 2-6). This is a creative exhibition of mostly succulents and subtropical plants that we on the west coast of Canada must bring into our cool green houses to survive the winter, but which in Auckland sprawl in gay profusion. Vireya rhododendrons cloaked in brilliant colours, accompanied by masses of echevaria, bromeliads, cactus, aloes, agaves, palm trees and many rare and unusual plants were artfully woven together with unique garden art and craggy, lichen-covered rocks into a tapestry of exceptional beauty, all sloping gently down to the serene waters of Waitemata Harbour—a feast for the eyes.

Fig. 3 Totara Waters.

Fig. 4. Totara Waters.

Fig. 5. Garden scene with many palms, aloes. Totara Waters.

Fig. 6. Vireya rhododendron. Totara Waters.

Fig. 7. *R.* 'Floral Sun'* at Eden Gardens.

Fig. 8. Vireya 'Dawn Chorus'* at Eden Gardens.

Fig. 9. *R. johnstoneanum.* Eden Gardens.

Reluctantly moving on, we next visited an abandoned quarry, the setting for Eden Garden (Figs. 7-9) on the slopes of Mt. Eden in Auckland, rescued by a group of volunteers some 45 years ago. Many beautiful vireyas figure prominently in this garden, along with New Zealand natives, amaryllis, abutilon, tree ferns, blue bells, clivia and a wide range of subtropical plants, all thriving alongside ponds, streams and interesting rock formations. Masses of bromeliads were growing from almost every crack. It is here that we first came across the lovely *Rhododendron johnstoneanum* (Fig. 9), a slightly tender and fragrant Maddenia that was thriving in a picturesque grotto of waterfalls, ferns, bromeliads and vines. A moderately challenging trek up the mountain was rewarded with spectacular views out to the sea, and then we caught sight of *R.* 'Floral Sun'* (Fig. 7), a hybrid of *R. nuttallii*, breathtakingly fragrant and glowing in the jungle-like growth! Eden Garden is extensive, and offers a serene place for city dwellers to get away from the hustle and bustle.

Nothing could have prepared us for Ayrlies, truly a garden of inspiration and stunning beauty, lovingly created and cared for by Bev McConnell since 1964 near Whitford, southeast of Auckland. Considered a NZ Garden of National Significance, Bev still

Fig. 10. Arylies.

Fig. 11. Arylies.

Fig. 12. Pond, gunnera, tree ferns. Arylies.

Fig. 13. *Metrosideros excelsa* (pōhutukawa, New Zealand pohutukawa, New Zealand Christmas tree). Arylies.

tends her garden of tranquil ponds, streams, and enticing vistas, providing a home for native and exotic tree species, tree ferns, begonias, rhododendrons, cineraria, wisteria, clivia, and of course all the birds and other wildlife that find sanctuary within this 4.9 ha (12 acre) garden carved from a treeless paddock over the past 50 years (Figs. 10-13). Truly a hands-on gardener with a keen eye for her plants and the scenes they create, Bev is delighted to welcome visitors to her work of art. By now, we are beginning to understand the uniqueness that is New Zealand—immigrant pioneers from Scotland and England reluctant to let go of their accent and traditions, blended with the native Maori culture that is ever present. It is a marriage of traditions and history that appears to work well. We were very reluctant to leave Ayrlies, named for the McConnell family farm in Scotland and tended in the tradition of Bev's Hawkes Bay childhood memories.

Our travels next took us to New Plymouth in Taranaki Province on the west coast of the North Island, watched over by a magnificent snow-covered extinct volcano known as both Mt. Egmont and Mt. Taranaki (Fig. 14). Our first stop was the private garden of our local guide Lynn Bublitz, knower of all things rhododendron in Aotearoa, the Maori name for New Zealand meaning "Land of the Long White Cloud". Lynn's city garden, significant for the enormous and steep gully that is his back yard, contains hundreds of rhododendrons and subtropical plants (Fig. 15). Truly a plantsman of unending knowledge and pride for this part of the country, Lynn grows the magnificent *Lobelia deckenii* (Fig. 16, Giant Kilamanjaro Lobelia), a stunner seen also in the rock

Fig. 14. Mt. Taranaki.

Fig. 15. Lyn Bublitz's garden.

garden at the Dunedin Botanic Garden and for those intrepid few, of course on Mount Kilamanjaro!

Clearly, New Zealanders are people of great vision and pioneering spirit. And Pukeiti, a creation of the Pukeiti Rhododendron Trust and under the stewardship of the Taranaki Regional Council, is testament to this. Not knowing what to expect on our wild and winding ride up the slopes of Mt. Taranaki, we were escorted on a trek through 26 ha (64.2 acres) of garden surrounded by 336 ha (830 acres) of protected rainforest. Pukeiti is home to vireyas, big-leaf rhododendron species, five varieties of tree ferns, native ferns and many home-grown hybrids. The native *Clematis paniculata* can be seen scrambling through the rhododendrons, creating a subtropical,

Fig. 16. *Lobelia deckenii* (Giant Kilamanjaro Lobelia) at the Bublitz garden.

Fig. 17. The South American evergreen, aromatic orange-bark myrtle (*Luma apiculata*). Pukeiti.

jungle-like feeling. The genus *Rhododendron* is not native to NZ, but it thrives here for sure. Sourced from the wild, much of the collection here boasts large and healthy specimens of Asiatic big-leaf rhododendrons and vireyas, many of which are endangered or vulnerable in the wild, with at least one species known to be extinct in the wild.

Several days would be required to see everything that Pukeiti has to offer, but images of an elegant *Luma apiculata* (Fig. 17, Orange-bark Myrtle), *Rhododendron morii, R. formosum, R. burmanicum, R. macabeanum* along with many stunning vireyas and ferns (Fig. 18) are etched in my memory. Sadly, the magnificent *R. nuttallii* was not yet in bloom.

Fig. 18. King fern (*Ptisana salicinia*) with Lyn Bublitz and Elaine Derkach. Pukeiti.

Reluctant to leave this extraordinary place, our dinner and camaraderie at the home and garden of Margaret and

Fig. 19. Margaret and Richard Hodge's masses of vivid *Pericallis cruenta* (cineraria).

Richard Hodges, and the sight of masses of vivid *Pericallis cruenta* (Fig. 19, cineraria), was a satisfying end to an amazing day in Taranaki, and testament to the warmth and friendliness of these New Zealanders.

Rotorua and a Maori hāngi (a traditional New Zealand Māori method of cooking food using heated rocks buried in a pit oven) were our treats for the next day. On the way, a brief respite at Te Kuiti and the Wagstaff home revealed more horticultural gems, including the magnificent *Telopea speciosissima* (Waratah), all blousy and orange/magenta in full bloom, and a multi-trunked 15.2 m (50 foot) specimen of *Rhododendron* 'Sir Robert Peel', a cultivar that was planted as street trees in Rotorua in the 1920s. I wonder how many plant books warned the unsuspecting of the ultimate size of this rhododendron marvel?

On the way to Rotorua, we learned of the plight of the seriously endangered kiwi, a national treasure of New Zealand, revealed to us during a quick diversion to Otorohanga Kiwi House, an education and conservation centre dedicated to the protection of these unique and gentle birds. Kiwis and other flightless birds thrived before dogs and ferrets were introduced to New Zealand. Unable to protect themselves from these and other predators, they are the subject of many conservation programs designed to increase their population and prevent extinction.

In Rotorua, Jeanette Blackburn gardens, sculpts and paints wildlife, landscapes, and nature in meticulous detail. Her highly manicured and beautiful garden, with a distinct charm of its own, was the polar opposite of the Pukeiti rainforest. Many of us came

Fig. 20. A hanging basket of vireyas at Rhodohaven.

away with unique cards and prints from this highly acclaimed New Zealand artist. One of Jeanette's paintings was chosen as the gift from the people of New Zealand to Her Majesty Queen Elizabeth II on the occasion of her Golden Jubilee visit in 2002.

Jim and Juanita Elley's "Rodohaven" near Rotorua is more than home to a very fine and diverse collection of rhododendrons and other horticultural treasures. It is also "Kitty Haven," providing a sanctuary for Bella and Romeo, two gorgeous and friendly felines who were as much admired as, for example, the amazing giant hanging baskets of vireyas (Fig. 20), strung up on the lofty limbs of an ancient tree utilizing Jim's engineering skills. In the rhododendron dell, banks of mature specimens such as *Rhododendron* 'Saffron Queen', 'Pink Porcelain', 'Floral Gift', 'Double Eagle', 'Naselle', 'Spiced Honey', and 'Puget Sound' bloom in profusion, along with trochodendrons, viburnums, and hanging planters of hostas, an idea I may adopt in my own garden to protect precious cultivars from becoming slug and deer fodder!

Fig. 21. Views at Maple Glen.

Fig. 22. Views at Maple Glen.

Next day we embarked on a dizzying round of flights to Wellington, then to Queenstown, South Island, and hikes around Chantecler, a private estate with vast gardens, ponds, alpacas and fallow deer, and then on to the famous Milford Sound.

Unsuspecting, we had no idea that our visit to Maple Glen Garden and Nursery near Gore (see Fig. 1 in Jamieson, p. 5) would set our hearts racing. Maple Glen is horticultural eye candy for plantsmen and fans of sweeping landscapes alike (Figs. 21-22). Like Ayrlies, it is the life work of a family from the "old country," this time by Irish immigrants Bob and Muriel Davison and their son. Over the past 50 years, pasture has gradually been transformed to one of the most beautiful gardens that I have ever seen. Emerging from a stroll through the bluebell wood, we suddenly came upon magnificent sweeping views in all directions that elicited audible "oohs and aahs." Hundreds of Japanese maples, trilliums, evergreens, and rhododendrons among ponds and rolling hills and dales sprinkled with lambs and ewes, all tended to perfection by the loving hands of experienced and talented gardeners. The result was a garden so memorable that we had great difficulty taking our leave. Many diverse wildlife make their home here, including colourful birds, friendly ducks, and some very scary black swans, which because they were nesting on some of the pond's islands, made warning signs to keep clear quite critical. More than a collection of rhododendrons, this garden is a truly beautiful landscape and artistic creation with spring ephemerals, native plants, magnificent trees and water features. I would return to New Zealand just to see this garden and Ayrlies once again!

All these truly magnificent and diverse gardens were stitched together by the gently rolling green hills of New Zealand, dotted with lambs and ewes like a picture postcard. From the subtropical gardens where we strolled in short sleeves, to rhododendron masterpieces where we experienced a late spring snowfall on our last day in Dunedin that caused our hands to freeze, New Zealand is a land unmatched in beauty and friendliness, a must-see destination for garden-lovers everywhere.

*Name is not registered

Linda Derkach is current president of the Mount Arrowsmith Chapter, and Secretary of the ARS.

Rhododendron luteum

Glen Jamieson
Parksville, BC,
Canada

Rhododendron luteum, section *Pentanthera*, is a deciduous azalea native from eastern Europe to the Caucasus. It can grow to 4 m (13 ft), but usually much less (Fig. 1), has fragrant, yellow flowers (Fig. 2) in the late spring, and is hardy to USDA Zone 5 (-20° to -10°F; -30° to -23°C). It is a widely grown species that has been involved in much hybridization to produce many deciduous azaaleas, such as 'Lackamas Bouquet', 'Minas Gold' and 'Madame Debene', and many cultivars are grafted onto *R. luteum* stock.

The Rhododendron Species Botanical Garden (RSBG) in Federal Way, WA, describes the cultivar 'Golden Comet' as the best form of this always lovely species. Large, deep yellow, highly fragrant flowers occur in mid-spring, with bright red fall foliage (Fig. 3). Its easy to grow in sun or light shade, is cold and heat tolerant, and this selection is resistant to powdery mildew. They label it a superb plant for most rhododendron-growing regions.

Fig. 1. A 10-year *R. luteum* 'Golden Comet' in Parksville, BC, Canada. Photo by Glen Jamieson.

Fig. 2. *R. luteum* flowers from Mike Bale's garden, Lu Zhu, in Agassiz, BC, Canada. Photo by Garth Wedemire.

For cultural information, the RSBG gives a set of three numbers (metric measures enclosed within parentheses), which for *R. luteum* is: –10 (-23)\R1\4 (1.2).

RSBG guidelines have been modified here to include the metric system, and the first is the hardiness rating in Fahrenheit degrees and Celsius degrees. This gives an approximation of the lowest temperature the plant can withstand without substantial damage (see hardiness note below).

The second number—R1, R2 or R3—is the ease of cultivation rating. This is a system developed at the RSBG to provide the average gardener with a quick and easy method of selecting the appropriate plant material: R1—easy and reliable using standard methods of cultivation, R2—easy if certain specific cultural requirements are met; these are usually given in the general description ("sharp drainage" or "requires shade" for example), and R3—can be difficult even for the experienced grower.

The third number is the approximate height in feet and metres in ten years from a two-year old plant. This is estimated using the average rate of growth for that particular clone (or species) under typical garden conditions.

A Note on Hardiness—Average annual minimum temperature is generally accepted as the key factor in determining the hardiness of a plant, but there are other important factors such as moisture levels, age of the specimen, health, exposure, snow cover and soils. Thus, the minimum temperature given for any plant should be used only as a rough guideline to whether or not it will thrive in a given locale. Many of the minimum temperatures given are estimations based on data available in the literature (often from Great Britain) and our own observations here at the RSBG.

Fig. 3. Fall colour of *R. luteum* 'Golden Comet' in mid-December in Parksville, BC, Canada. Photo by Glen Jamieson.

The Word: Anthocyanin

Bruce Palmer
Cutten, California

Photos by the author

Winter is upon us in the northern hemisphere. The leaves of deciduous plants have long since transitioned from green through orange, red and yellow to compost. When this article was first written in mid-May 2015, it seemed appropriate to talk about one of the pigments that causes fall colors, **ANTHOCYANIN** (Greek: *anthos*, flower, and *kyanos*, blue). It still is! The anthocyanins are some of the major pigments that give the red coloration to deciduous leaves before they fall in autumn. Anthocyanins also influence the various shades of color in flowers, including our rhodie blossoms, from reds through purple to nearly blue. The specific shade of color is determined by combinations of hydrogen, oxygen and carbon attached at different locations around the primary molecule. It is also influenced by the acidity of the soil and water surrounding the plant and by various factors in the plant itself. A good article by Stan Southerland in this issue of *JARS* (p. 39) details a number of interactions in plant tissues that control the expression of anthocyanin in flowers. Differing anthocyanin molecules are typically named after the plant from which they were first extracted; thus Delphinidin, Petunidin and Rosinidin. Delphinidin, for example, gives delphiniums their blue color and is also found in the skins of grapes that impart color to red wine

Fig. 1. *R. faithiae*, showing anthocyanins in its new leaves.

(Ribireau-Gayon 1958).

Anthocyanins function in leaves in a number of ways. In the spring, many plants, both deciduous and evergreen, produce new leaves that are various shades of red. One of the inspirations for using this word in the Eureka Chapter May 2015 newsletter was the striking red new leaves on the *Rhododendron* relative *Pieris* sp. in our garden. The red anthocyanins in tender young leaves protect the cells from sunburn and reduce evaporation. The new species *Rhododendron faithiae,* currently offered by the Rhododendron Species Foundation, exhibits this red coloration handsomely in young leaves and stems (Fig. 1). Anthocyanins appear in leaves in the fall as protection from light and for sequestering and transporting recycled molecules from the dying leaves to the stems and roots. Hybridizers take advantage of the beautiful red pigments in leaves to produce plants with leaves that show their red anthocyanins throughout the year. It was the red-leaved table favors at the America Rhododendron Society's annual international convention in Sidney, B.C., in May 2015 that triggered my use of anthocyanins in this word article. What could be a better example than the recent Cox hybrid 'Ever

Fig. 2. 'Ever Red', showing leaves that retain their anthocyanins throughout the year.

Fig. 3. 'Black Sport', showing how hybridization can intensify the amounts of anthocyanins present to produce darker colors.

Red' (Fig. 2), with its retention of anthocyanin-rich, red-tinted leaves throughout the year!

Anthocyanins are probably the most important pigments that give flowers their colors. Many flowers, including rhododendrons, have been hybridized to yield patterns and color combinations that are pleasing and often unusual (Figs. 3, 4), but flowering plants have the color patterns in specific locations for reasons unrelated to humans. The lines, splotches and deep colored centers in flowers, called nectar guides, are usually there to attract pollinators. The nectar guides reflect ultraviolet light which insects can see but humans cannot. The nectar guides show insects where the sweet reward is and the flower gets pollinated as the insect imbibes. Anthocyanins and other pigments are used as pollinating attraction devices in many unique ways. Flowers pollinated by bees and wasps tend to be various shades of yellow and blue. Butterfly pollinated flowers tend toward red and orange. Moth pollinated flowers are stark white, often fragrant and open at night.

Figure 4: 'Mrs G.W. Leak', showing nectar guides as heavily splotched lines leading insects to the center of the flower, hybridized to intensify color.

Anthocyanins are also present in the skins of most berries and fruits, including blueberries, cranberries, tomatoes and eggplants. Good evidence of the effectiveness of anthocyanins in berries and fruits as antioxidants for disease prevention is published regularly (Wallace 2011). Anthocyanins extracted from red cabbage are often used as acid/alkaline indicators; in solution the anthocyanin color changes from red at the acidic end toward blue when a solution becomes more alkaline. The same holds for some flowers in acid or alkaline soils, hydrangeas being good examples in our gardens. Anthcyanins are being used increasingly when organic food coloring products.

As I was putting the finishing touches on this article in May 2015, an ad for a new book in the *Science for Gardeners* series came from Timber Press. I ordered Linda Chalker-Scott's *How Plants Work* and discovered a book that I feel would be useful for every gardener. The book devotes an entire chapter to anthocyanins with many

bits of information not included here. There are excellent, very readable explanations of various plant physiology topics and sidebars containing numerous useful hints for gardeners (such as be cautious about using epsom salts and don't assume that symptoms of desiccation always indicate a lack of water). The book also has a heavy emphasis on rhododendron issues.

Anthocyanins, those pigments that give our rhododendron flowers and leaves most of their beautiful colors and which yield many useful products, such as antioxidants, acid indicators and food coloring, are thus quite important, both for the plants that produce them and for the people who consume them. Let's enjoy anthocyanins as we continue cultivating and hybridizing rhododendrons in our gardens.

References

Chalker-Scott, L. 2015. *How Plants Work.* Timber Press, Portland OR.: 235 pp.

Ribereau-Gayon, J. and P. 1958. The Anthocyans and Leucoanthcyans of Grapes and Wines. *Amer. J. Enology and Viticulture* 9: 1-9.

Southerland, S. 2016. The Role and Opportunity Presented by Obtaining Unexpected Results or Serendipity in Hybridizing Rhododendrons. *J. Amer. Rhod. Soc.* 70: 39-46, 47-49.

Wallace, T.C. 2011. Anthocyanins in Cardiovascular Disease. *Adv. Nutrition* 2: 1-7.

The greatest gift of the garden is the restoration of the five senses.

Hanna Rion

Azalea Lace Bug in Oregon: A Threat to Horticultural and Native Plants

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Photos by Thomas Shahan, Oregon Department of Agriculture

The azalea lace bug (AZLB, Fig. 1), *Stephanitis pyriodes*, is an Asian species known from the eastern USA for almost a hundred years and is different from the native rhododendron lace bug (Fig.2), *S. rhododendri*. Both these bugs should not be confused with *Corythucha* species. An image of *Corythucha cydoniae* (Fig. 3) is included as a

Fig. 1. *Stephanitis pyriodes.*

Fig. 2. *Stephanitis rhododendri.*

Fig. 3. *Corythucha cydoniae*.

representative of that diverse and common genus, as *Corythucha* are probably the most commonly encountered tingids found outside of a nursery or landscape setting. AZLB in the eastern USA has been a sporadic pest of ornamental azaleas and species of rhododendron, especially those in hot and dry situations. The very fine sucking mouthparts penetrate leaf cells and extract chlorophyll and other cell contents. AZLB is behaving very differently in Oregon, where it was first recognized in 2009, than in the eastern USA. It has caused widespread and severe damage to ornamental azaleas and rhododendrons throughout the Willamette Valley, with up to almost total loss of chlorophyll from the entire canopy of infested plants. It is attacking plants never before recorded as hosts, including several species of ornamental *Gaultheria*

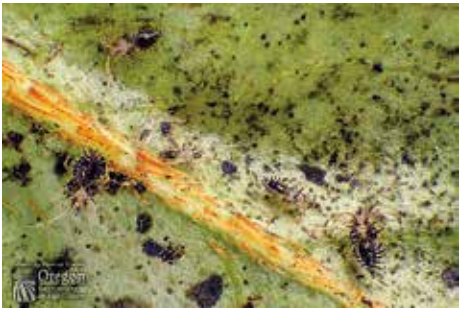

Fig. 4. AZLB life stages on undersids of leaves.

Fig. 5. Signs of infestation on top of leaves.

Fig. 6. Signs of infestation on bottom of leaves.

and *Vaccinium* and even commercial blueberries. AZLB also attacks native wild plants in nursery and ornamental settings, such as salal (*Gaultheria shallon*), western azalea (*R. occidentale*), and both species of *Kalmiopsis*.

Repeated severe damage may diminish the vigor of or even kill favored plants. Thus, AZLB may be not only a major horticultural pest but may also threaten native forests and shrub lands. AZLB is not yet known outside of urban settings in Oregon. Because of these concerns, we are asking gardeners and nursery owners to check potential hosts in the family Ericaceae, especially other than azaleas and rhododendrons, for the presence of AZLB.

All AZLB life stages are found on the undersides of leaves of hosts, often concentrated along the midrib (Fig. 4). Signs of infestation (Fig. 5, 6) include pale yellow spotting on the top of leaves and tarry, black fecal spots on the underside, along with the spiny immature stages and the adults. Only AZLB and the rhododendron lace bug, a native species, are likely to be found on ericaceous hosts. If suspect AZLB are found on the West Coast, please collect specimens (kill in alcohol and then preferably mail in a small container with paper saturated in rubbing alcohol, or least desirably, without alcohol) with locality and host data, after contacting James LaBonte at 503-986-4749 or jlabonte@oda.state.or.us.

Lace Bugs on Rhododendron

Dr. Thomas Brand
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(Kindly translated from German from Brand (2014) by George Gutsche, Bowser, BC, Canada, Mount Arrowsmith Chapter)

Various insects are using *Rhododendron* as a host plant. Quite well known is the notch-like damage on the margins of leaves done by the rhododendron black vine weevil (*Otiorhynchus sulcatus*) and the mottled patterning from the rhododendron leafhopper (*Graphocephala fennahi*). On the other hand, little is known generally how rhododendron and azalea lace bug (*Stephanitis* spp.) infestations appear. This is possibly

Fig. 1: Mottling on the upper leaf surface. (photo: T. Brand).

due to the habit of the insects to remain on the underside of the leaves and up to now, have a relatively minor effect on a host plant. It is only since the appearance of the Andromeda lace bug (*S. takeyai*) in Europe that our attention is becoming more focused.

Appearance of Damage

Minor lace bug infestations appear first as small, individual, brighter spots on the tops of the leaves. As the damage increases, the mottling gets larger (Fig. 1). Massive

Fig. 2: A massive lace bug attack can cause severe discoloration. (photo: T. Brand).

Fig. 3: A lower leaf surface soiled by droppings. (photo: T. Brand).

damage discolours the whole leaf, with only the midribs not affected (Fig. 2). The damage can now be recognised at a distance from the plant. The leaves are pale in colour and seem to indicate a lack of nutrients or a spider mite infestation. Finally, the leaves become rolled up and dried out. On the undersides of the leaves can be found the filigree-looking, sluggish lace bugs and their larvae. Often there are black, varnish-like, shiny fecal deposits [frass] and discarded larval moult skins (Fig. 3). These castings remain during the inactive period of the insects, when live ones are absent, and indicate an infestation.

Lace Bug Biology

S. oberti occurs naturally in northern Europe, Siberia, Korea and Japan. There it is especially found on *Vaccinium* but it also occurs on other ericaceous plants (Rietschel 2013). This lace bug is widely distributed and is commonly known as the "European rhododendron lace bug," in contrast to the "American lace bug," *S. rhododendri,* which was introduced into Europe about 100 years ago (Lichter and Sander 2000, Rietschel 2013). Additionally on rhododendrons now, the Andromeda lace bug, native to Japan, has been found in Germany since 2002 (Hommes *et al.* 2003).

At present in Germany, rhododendrons are infected by all three species of rhododendron lace bugs: *S. oberti*, *S. rhododendri,* and *S. takeyai. S. pyrioides.* The

Asian lace bug introduced to North America is not presently established in Europe. Quite often all three rhododendron lace bugs infest plants together, i.e., one can find different species on individual host plants.

The preferred host plant of the Andromeda lace bug is *Pieris japonica* (lily-of-the-valley shrub, or Japanese andromeda), but rhododendrons can also be host plants. In *Pieris*, massive damage can happen, sometimes resulting in plant death.

Fig. 4: *Stephanitis rhododendri*, the American rhododendron lace bug. (photo: T. Brand).

Fig. 5: *Stephanitis oberti*, the European rhododendron lace bug. (photo: M. Hommes).

With casual observation, lace bugs species found on rhododendrons all look very similar in size (3-4 mm), form (lacey wings), colour and the quite evident neck (thoracic) hood. More detailed observation is necessary for definitive identification of specific species. With *S. rhododendri*, there is only one dark stripe on the wings (Fig. 4), whereas on *S. oberti* and *S. takeyai* there are two stripes. On *S. oberti*, the hindstripe is angled towards the back (Fig. 5) whereas on *S. takeyai*, the stripe is straight. Also, the dark colouring of the stripes is darker on *S. takeyai* and the veining on its wings is more visible in comparison to that on the other varieties (Fig. 6). Finally, the neck hood on *S. takeyai* is black (Fig. 7), whereas that on the other species is light brown.

Fig. 6: *Stephanitis takeyai*, the Andromeda lace bug. (photo: H. Beltz).

Fig. 7: The dark hood is clearly visible above the head of *S. takeyai.* (photo: M. Hommes).

The life cycles of the three species are similar. After impregnation, females deposit their eggs through an ovipositor into the leaf tissue, mostly close to the midrib on the underside. The insertion point is sealed with a drop of frass to close the opening in the leaf to protect the eggs against parasites and predators, and the eggs then overwinter in the evergreen leaves. Occasionally the eggs are deposited on deciduous azalea leaves, resulting in their death when the leaves die in the fall (Hommes and Westhoff 2004). After their emergence in the spring, the larvae at first feed together and later, distribute themselves on the underside leaf tissues. Larvae are darkly coloured and have "spines" (Fig. 8). Hommes and Westhoff (2004) suggest two to three generations of Andromeda lace bugs can occur in a year in Germany's climate. The other lace bug species produce only one generation per year in Germany, which explains the more intensive castings and damage resulting from *S. takeyai* in comparison to that from the other species.

Prevention

Lace bugs generally prefer specific host plants. The Andromeda lace bug prefers above all *Pieris*. Rhododendrons are usually only infected if very close to massively infected *Pieris* and then with only minor infestations (Hommes and Westhoff 2004). However, massive damage of rhododendrons without *Pieris* close by (H. Beltz, per.

comm., 2014) seems to a changing picture may be increasingly occurring, perhaps because of the species' adapting. It has been suggested that the surface characteristics of the leaves of a potential host plant is important, as plants having leaves without indumentum or leathery surfaces are preferred (Richter and Sander 2000). This could be an important consideration in the selection of rhododendrons to be grown in a garden.

S. takeyai has been seen on the large flowering *R. insigne* hybrids, as well as on *R. minus* forms and Japanese and deciduous azaleas (B. Ehsen, pers. comm., 2014). In 2012, the Deutsche Rhododendron-Gesellschaft funded a trial planting at the Versuchsanstalt für Gartenbau in Bad Zwischenahn. A broad selection of modern large flowering hybrids, *R. degronianum* var. *yukushimanum* hybrids and other species were tested without application of pesticides for resistance to bud blast and possible differences in lace bug attacks. Results of this study are expected in 2016.

Fig. 8: Larvae of *S. takeyai* with the typical spines. (photo: H. Beltz).

Historically, it is evident that the spread of introduced lace bugs is due to the increasing trade with infected plants. Therefore, when purchasing plants, a thorough inspection is necessary. This applies especially to imported plants from different parts of the world, such as [for Europe] from North America and Asia, where additional lace bug species occur (Johnson and Lyon 1991, Rietschel 2013). The introduction of additional insect pests must be prevented! All of the described indicator symptoms (moult castings on the leaves, frass on the undersides) and most important, living insects, should raise concern. If symptoms are present, either the plants should be rejected or they should be immediately properly treated.

Part of an introduction preventative program also includes the regular examination of the undersides of leaves of new plants. If an attack is found in its early stages and is still small, the chance of a successful pest eradication is best when using necessary countermeasures.

Countermeasures

Removal of damaged vegetation by cutting can eliminate lace bugs. Eggs deposited in leaves can be removed during the winter and destroyed before they would hatch in the spring, greatly reducing the chance of an attack. However, this is a fairly radical intervention and could possibly affect the survival of already weakened plants.

Against existing colonies of larvae and mature lace bugs in private gardens, a dedicated use of insecticides formulated against sucking insects is needed. The availability of approved products available has been reduced but it is still sufficient and with a proper application, can be successful against lace bugs. Contact products with pyrethrine and canola oil ingredients put on the undersides of leaves allows lace bugs to come in direct contact with the active ingredients. Application of systemic insecticides like acetamiprid or thiacloprid (both a neonicotinoid) in Europe (there might be other pesticides registered to control lace bugs (or other sucking insects) in North America) is sufficient for application on the tops of leaves. [**Editor's note**: The impact of neonicotinoid insecticides on insect pollinators is highly controversial. Sublethal concentrations alter the behaviour of social bees and reduce survival of entire colonies. However, critics argue that the reported negative effects only arise from neonicotinoid concentrations that are greater than those found in the nectar and pollen of pesticide-treated plants. Furthermore, it has been suggested that bees could choose to forage on other available flowers and hence avoid or dilute exposure. It's probably thus best to be particularly cautious here with use of these insecticides in private gardens.] Lace bugs appear mostly during the summer months, when they attack newly developed leaves, so the best time to treat plants with insecticides is therefore in July and August. This timeframe and these insecticides are also effective measures against the rhododendron leafhopper.

Eggs embedded in plant tissue and a decline in lace bug activity associated with cooler weather makes the application of insecticides less effective in the fall, as active insecticidal ingredients are less likely to reach vulnerable life stages.

Summary

There is an increased occurrence of lace bugs on rhododendrons and other plants in Germany. These insects can cause massive plant damage, but the risk of infestation can be reduced by the careful selection and inspection of plants. If necessary, an infestation can often be treated successfully with the appropriate use of insecticides.

References

Brand, T. 2014: Netzwanzen an Rhododendron. *Rhododendron und Immergrüne* 16: 69-74.

Hommes, M., J. Westhoff, and A. Melber. 2003. Andromeda-Netzwanze, *Stephanitis takeyai* Drake et Maa (Heteroptera: Tingidae) erstmals für Deutschland nachgewiesen. Nachrichtenbl. *Deut. Pflanzenschutzd*. 55(8): 174-177.

Hommes, M., and J. Westhoff. 2004. Informationen zur Andromeda-Netzwanze (*Stephanitis takeyai* Drake et Maa) – einem neuen Schädling an Lavendelheide in Deutschland. *Rhododendron und Immergrüne Laubgehölze*, Jahrbuch: 42-49.

Johnson, W.T., and H.H. Lyon. 1991. *Insects that feed on trees and shrubs.* Cornell University Press, Ithaca, USA.

Lichter, D. and F.W. Sander. 2000. Erstnachweis der Rhododendron-Gitterwanze *Stephanitis rhododendri* Horváth, 1905 (Heteroptera, Tingidae). In Thüringen. Heteropteron, Mitteilungsblatt der Arbeitsgruppe Mitteleuropäischer Heteropterologen, http://www.heteropteron.de/downloads/hetero-8.pdf. 16.01.2014.

Rietschel, S. 2013. *Stephanitis* sp. auf *Laurus nobilis* L.. Heteropteron, Mitteilungsblatt der Arbeitsgruppe Mitteleuropäischer Heteropterologen, http://www.heteropteron.de/downloads/hetero-40.pdf. 16.01.2014.

[**Editor's note:** After reading this article, I looked at *Pieris japonica* growing in central Vancouver Island, BC, Canada, and to my dismay, found both adult *S. takeyai* and the resulting mottled leaves on many of them. This Asian lace bug species seems to be well established here at least, which likely means that it is also in Vancouver and other parts of northwestern North America as well. I encourage readers to check their own plants and if necessary, try to treat them for this invasive pest.Unfortunately, it is likely impossible to eradicate this lace bug entirely from areas where it is present, but you might at least be able to save your own plants and make them look better!]

Awards

DE ANZA CHAPTER

Bronze Medal: Joe Randazzo

At the De Anza's annual June picnic, we were delighted to award the Bronze Medal to our long-time member who has been part of our group for about 40 years. Joe Randazzo is the member every chapter wishes they had. He helps with everything from greeting people to providing coffee. Most importantly, we could not have a plant sale without him. He is the first member to arrive early in the morning for plant sales, unloading plants, pricing and moving them to the sale area—and then, of course, talking to the public about rhododendrons, selling lots of them. As well as serving on the Board, Joe does a hundred things to help our chapter function and we all enjoy his friendship.

PORTLAND CHAPTER

Bronze Medal: Steve Hall

Your many contributions to the Portland Chapter of the American Rhododendron Society are greatly appreciated. Over the years, you have faithfully and cheerfully volunteered your talent and time to help make the Early Show and Mother's Day show successful. Your careful attention to detail while setting up the truss competition and your dedicated work at the plant sale are invaluable. Rain or shine, you are there. You have served on the Board of Directors and the Program Committee. Further, you have developed and continue to maintain the Chapter Web Site. Your thoughtful contribution to each of these responsibilities is counted on, and much appreciated.

In gratitude for your dependable service, the Portland Chapter is pleased to present the Bronze Medal, to Steve Hall, May 21, 2015, Portland, Oregon

Bronze Medal: Caroline Enns

Your many contributions to the Portland Chapter of the American Rhododendron Society are greatly appreciated. Over the years, you have faithfully and cheerfully volunteered your talent and time to help make the Early Show and Mother's Day show successful. Your careful attention to detail while setting up the truss competition and your dedicated work at the plant sale are invaluable. Rain or shine, you are there. You have served on the Board of Directors and the Program Committee. Further, you have developed and continue to maintain the Chapter Web Site. Your thoughtful contribution to each of these responsibilities is counted on, and much appreciated.

In gratitude for your dependable service, the Portland Chapter is pleased to present the Bronze Medal, to Caroline Enns, May 21, 2015, Portland, Oregon

Society News

Update of Transition Team Progress

As many of you are aware, Laura Grant, Executive Director of the ARS, is planning to retire after the Annual ARS Meeting in Wiliamsburg, VA. She has served well in this position for 11 years, and the Society will miss her valuable contributions.

At the Board of Directors meeting earlier this fall on Long Island, ARS President Bob MacIntyre appointed a transition/search committee to begin the process of assessing our next steps. We have been charged with attempting to identify and implement a cost effective plan to become effective upon Laura's departure. Options under consideration include replacing Laura's position into a more clerical one, reorganization of her duties and their distribution to a combination of volunteer and compensated positions, partnering with another plant society and even the possibility of retaining professional society management for this purpose.

The group communicates productively via conference calls and e-mails. We would anticipate initializing recommendations prior to the Board of Directors meeting at the April meeting. We will keep you apprised of our efforts and hope that if you have any suggestions, you will pass them on to us for consideration.

Members of the committee include Ann Mangels, Eastern Vice President; Ken Webb, Western Vice President; Linda Derkach, ARS Secretary; Bruce Feller, Immediate Past President; and David Banks, Budget Committee Chair.

Ann Mangels, Committee Chair

Rhododendron Calendar

2016	ARS/ASA Annual Convention, Williamsburg, VA, April 20-24, Board Meeting
2016	ARS Fall Conference, Newport, Oregon. Board Meeting. Dates to be announced.
2017	ARS Annual Convention, Eureka, California. Board Meeting. Dates to be announced.
2018	ARS Annual Convention, Germany (decision pending)
2019	ARS Annual Convention, Philadelphia, Pennsylvania. Board Meeting. Dates to be announced.
2020	ARS 75th Anniversary Convention, Portland, Oregon. Board Meeting. Dates to be announced.

ARS Board of Directors Meeting

Islandia Marriott Hotel, Long Island, New York, October 16, 2015

Minutes In Brief

1. President's Welcome

President Bob McIntyre announced that he has established a Transition Team of Ann Mangels, Ken Webb, Bruce Feller and Linda Derkach. Ann will be Chair of this committee that is tasked with managing the transition as Executive Director Laura Grant is retiring at the close of the 2016 AGM in Williamsburg, Virginia.

2. Minutes of ARS Board Meeting held May 6, 2015

Motion #1: Moved by Ann Mangels and seconded by Anne Gross that the minutes of May 6, 2015 be approved as circulated.

Carried

3. Bylaws and Policies Committee

During a review of policies, the committee found a policy that is no longer necessary as the Pioneer Achievement Award has been combined with other awards in the Recognition, Awards and Honors Committee at POB 9.4.

Motion #2: Moved by Steve Henning and seconded by Dave Banks that POB 4.3.9 providing for the appointment of two foreign members of the review panel (for the Pioneer Award) be deleted.

Carried

4. Treasurer's Report

Sam Burd walked the board through his report on the financial position of the association as of August 31, 2015. While the society's financial position has declined during the past fiscal year, it remains relatively strong. Two factors that have caused the decline are:

- The impact of the erratic and recently declining stock market on the invested assets of the Endowment and Life Funds.
- The tendency of the society's expenditures to exceed the inflow of funds from memberships, donations and prescribed contributions from the Endowment and Life Funds.

Due to efforts to reduce expenditures, operations will be close to breakeven. Further cost reductions in producing *JARS* have assisted as well. However, even with these cost-cutting measures, the society will continue to be in a deficit position for this fiscal year.

Motion #3: Moved by Sam Burd and seconded by Dave Banks that the travel expenses of the *JARS* Editor to the Sidney Convention be approved in the sum of $947 in recognition of the significant reduction in *JARS* publication costs.

Defeated

Motion #4: Moved by Bruce Feller and seconded by Marvin Fisher that we reimburse the Executive Director for travel expenses to meetings of the board.

Carried

No action was taken on the recom-mendations from the Treasurer due to the appointment of the Transition Team to consider these recommendations and make further recommendations to the Executive regarding the management of financial and legal functions and member services upon the retirement of the Executive Director.

The Treasurer highlighted the need for good financial controls.

We were reminded that the POB states that the *JARS* Editor is expected to attend all meetings of the Board. Thus, it follows that travel expenses must be reimbursed.

Motion #5: Moved by Ann Mangels and seconded by Anne Gross that the *JARS* Editor be reimbursed for travel expenses to meetings of the Board of Directors.

Carried

As a member of the Transition Team, Ken stated that our work needs to start immediately and will build on the work of the Finance Committee. We will need to work fast and may need to make some changes before the next Board meeting.

Motion #6: Moved by Steve Henning and seconded by Richard Fairfield that the POB policies relating to the duties and functions of the Executive Director and Treasurer be suspended to the extent required and as approved by the Executive Committee until the ARS Board of Directors meeting in April 2016 when a new administrative plan will be adopted. The terms and conditions of the policies shall remain in force unless modified by the Executive Committee.

Carried

5. ARS History Project Report

Motion #7: Moved by Steve Henning and seconded by Sam Burd that the Tables of Content of the issues of JARS that are not available to the public online be published so that researchers and other interested people can find articles of interest. The process to actually see the article would remain unchanged. They would either have to join the ARS, obtain a copy of the printed version of the journal, or make some other arrangement, just as at the present.

Carried

6. Directors and Officers Insurance

Motion #7: Moved by Steve Henning and seconded by Ann Mangels that we obtain Directors and Officers Insurance for the ARS Board of Directors in the amount of $1,416 (including a brokerage fee of $200). This would give us a $1,000 deductible and an aggregate limit of $1,000,000 liability.

Carried

7. Western Vice-President – Ken Webb

Ken promoted fundraising for the Nepal earthquake relief. This is being spearheaded by Ken Cox.

8. Eastern Vice-President – Ann Mangels

Ann gave us a summary of ARS conventions and conferences scheduled to the year 2020. Conventions that are confirmed are:

- Spring 2016 in Williamsburg, Virginia
- Fall 2016 in Newport, Oregon
- Spring 2017 in Eureka, California
- Spring 2018 in Germany perhaps
- Spring 2019 in Philadelphia, PA
- Spring 2020 in Portland, Oregon for the 75th Anniversary.

There is a proposal to hold our 2018 Convention in Germany along with the German convention. The ARS has chapters in Holland, Denmark, Finland, Sweden and Scotland, and it is assumed that many of these members would attend such a convention.
Action: Ken Webb will conduct a poll to determine attendance at a convention in Germany including Board member attendance.

Motion #8: Moved by Linda Derkach and seconded by Paul Anderson that we ask the Policy and Bylaws Committee to review policies with a view to increasing flexibility while retaining responsibility.

Carried

9. Digital *JARS*

Motion #9: Moved by Ken Webb and seconded by Steve Henning that we approve the inclusion of more photos for the digital *JARS* plus one additional educational article to enhance its interest and encourage readership and perhaps membership.

Carried

10. Reports from District Directors

- Ken Webb shared some of the ideas that came out of a meeting with *JARS* Editor Glen Jamieson to look at ways to encourage people to use the digital *JARS*, thus cutting some costs. At present, there is no incentive to switch to digital *JARS*.

- Ken shared a discussion regarding the use of Facebook to try to appeal to younger potential members. It is felt that Facebook will work better at the local level. Facebook could include photos and videos of our gardens, plants in bloom, meeting notices. It may not attract new members, but it might connect us together better.

- Anne Gross said that her chapter members still want to receive the printed version of the *JARS*. Her chapters are having difficulty getting speakers. Siuslaw has moved to a 4:00 pm meeting on Sunday afternoons. Some chapters are joining together for meetings.

- Paul Anderson encouraged us to join foreign chapters as Associates in order to get to know others and their activities.

11. Committee Reports

ARS Store - Steve Henning

Each year we are doubling our income from the store. Steve asked that we all put the ARS Logo and store information in our newsletters.

Digital Publications - Dave Banks reporting for Bob Weissmann

Dave reported that the new ARS website is up and running and looks wonderful!

Program Library

Marvin Fisher reminded us that there are interesting and informative programs on DVD for purchase. Please contact Marvin.

12. Replacing our Executive Director

There was a general discussion about how we should proceed. Ideas and suggestions should go to Ann Mangels who is Chair of the Transition Team. A Search Committee will be composed of the Eastern and Western Vice Presidents, one member chosen by the East and one chosen by the West and one member chosen by the President.

The meeting adjourned at approximately 4:00 pm.

Linda Derkach
ARS Secretary

Early Chapter Shows

MT ARROWSMITH - Mt. Arrowsmith Truss Show and Sale; 10 a.m. - 2 p.m., Saturday, April 23; Parksville Curling Rink, Parksville, BC; Garden Tour, May 7-8. Contact: Ray Walker.

NANAIMO - Nanaimo Rhododendron Society's Show and Sale; 10 a.m. - 2 p.m., Sunday, May 1; Beban Park. Garden Tour May 14 and 15. Contact: Chris Southwick.

PORTLAND - Portland Chapter's Show and Plant Sale; Saturday and Sunday, April 2-3; Crystal Springs Rhododendron Garden, 5801 S.E. 28th Avenue in Portland, Oregon. This event is being held in conjunction with The Daffodil Society's Annual Show.

Entries of trusses for the Rhododendron Show will be accepted at the exhibition hall from 6 - 8 p.m. on Friday evening (April 1) and from 7 - 9:30 a.m. on Saturday (April 2). The Show opens to the public at noon on Saturday (after judging), and reopens at 9 a.m. on Sunday, closing at 5 p.m. on both days. The plant sale will be open 9 a.m. - 5 p.m. both days, and is open to the public.

SIUSLAW - Early Rhododendron and Azalea Flower Show and Pant Sale; Display of Rhododendron and Azalea Bonsai; Flower Show open to the public, no charge, Saturday after judging 1 - 5 p.m.; Sunday 10 - 5 p.m.; Saturday and Sunday , April 16 and 17; Florence Events Center, 715 Quince Florence OR 97439, Contact: Mike Bones.

Bonsai display is open to the public on Saturday and Sunday with the flower show, located inside the building. Plant Sale open to the public on Saturday and Sunday from 10 a.m. - 5 p.m; located outside on south side of building.

The public may bring flower trusses for judging on Saturday from 7 - 9 a.m. The truss must come from a plant the owner has grown for at least 6 months.

Ribbons,Trophies and raffle prizes will be awarded to non members and members. Experts will be on hand to answer questions about azaleas and rhododendrons.

Election of District Directors

In accordance with Article IX, Section E of the Bylaws, the chapter presidents in ARS District 1, 2, 7,and 10 served as their districts' nominating committees. These committees have proposed the following nominees. The nominees are automatically certified as having been elected. The three-year terms of all who are elected will commence at the adjournment of the Society's 2016 annual meeting.

(Continued on next page)

Society News

Election of District Directors continued

DISTRICT 1
District Director
Chris Hodgson

District Director Alternate
Chris Hodgson

Chris Hodgson was born in Yorkshire, England, where he spent his early childhood years. His family immigrated to eastern Canada in the early '50s. He was educated in Ontario and Quebec, graduating with a Ph.D. in geology in 1969 from McGill University. Most of his professional career has been spent (miss-spent?) exploring for base and precious metals in Canada and Latin America.

His first recollections of gardening were at the age of five "helping" his father plant out potatoes and Brussels' sprouts in the family victory garden on the Yorkshire moors. At age 10 he was growing peanuts on the sandy shores of Lake Ontario. At age 15 he was working in the orchards of the Niagara Peninsula. And at age 30 he planted out his first rhododendron, a 'Taurus', in North Vancouver, BC.

He and his wife, Margaret, now live in south Surrey, BC. They have raised three children, partially raised (OK, babysat) five grandchildren and are presently raising an apple orchard, a vegetable patch and a couple of hundred rhododendrons on their Surrey property.

Chris has been a member of the ARS since 2003, first with PARS (Peace Arch Rhododendron Society) and currently with the FSRS (Fraser South Rhododendron Society) of District 1. When it comes to rhododendrons, Chris claims to be merely an enthusiastic amateur.

District Director Alternate
Chris Southwick

Chris Southwick had the good fortune to be born into a family that loves the outdoors, gardening, and rhododendrons in particular. Her grandparents were Ted and Mary Greig, who were pioneering rhododendron and alpine plant enthusiasts on Vancouver Island. They passed on an appreciation for plants to their son Jim and their daughter-in-law Jean, Chris's mother.

Chris has been gardening all of her adult life and her first garden was a vegetable patch in an old horse corral at a homestead called "Mooselick" eight miles off the Alaska Highway at Milepost 428. Chris was married to a guide-outfitter at the time and was the teaching-principal of a one room school at Muncho Lake, B.C. She eventually became a full time principal in Fort Nelson and moved back to her birthplace, Nanaimo, B. C. in 1992 after earning her B.Ed. from UBC and then her M.Ed. from the University of Victoria. Prior to her retirement in 2013, she was Assistant Superintendent of Schools in Nanaimo.

Joining the Nanaimo Rhododendron Society in 1994, Chris became involved with

(Continued on next page)

Election of District Directors continued

that chapter and served as program chair, treasurer, vice-president, president, and board member for most of the years since joining the Society. She has co-chaired the annual Show and Sale, judged shows for other Vancouver Island clubs, and was co-chair of the 2012 Fall ARS Regional Conference. She was honoured with the NRS Bronze Medal in 2008. As a rhododendron species proponent, Chris currently serves on a committee that is helping to create a species garden at Milner Gardens and Woodland in beautiful Qualicum Beach, B.C. She recently became a certified Master Gardener to carry on learning about plants and giving back to the gardening community. She is currently the president of the Nanaimo Rhododendron Society.

Chris built a new home in 2008 on just over half an acre. She enjoys sharing her garden of several hundred rhododendrons; including many dwarf species rhodos, many native flowering plants, ferns, Japanese maples, dogwoods, primulas and . . . vegetables.

DISTRICT 2
District Director
Richard Fairfield

Hi! If you want to see my total background and why I was unqualified for the position of Director from District 2, you will have to refer to my bio from three years ago—winter 2013. Having been in this position for 3 years now, I realize that most of my past achievements were of very little use on the ARS board. These past three years have gone by very quickly and I have really enjoyed myself—getting to meet other enthusiasts and attend conferences that I would not otherwise go to.

Now for the update to my bio: I now have four fully planted rhody gardens, a fifth area in the process of being cleared for another rhody garden and an open area lined with adopted rhodys. My guess is 400 plants in the ground and other 50 in the wings—mostly unique varieties. My first batch of seedling were successfully spouted but I managed to burn them all up the first time I put the tray out—so I have tried again and hope to be more successful. While my cutting projects have not been too successful, I have set up a large freezer for a propagating chamber with cuttings in plastic water bottles—ala Marc Columbel.

As Director, in addition to attending and contributing to the ARS board meetings, I have been active within our district. I convinced our chapter to step outside our normal internal activities and embrace the educational aspect of the ARS charter. Pilchuck chapter sponsored an educational booth at the local Home and Garden Show, where we were allowed to hold our annual plant sale—a word of caution, when doing a show like this and you want to sell plants, make sure of the typical audience and the potential for bloom concurrence. To provide the educational aspect of the show, I developed three large wall displays that exhibit the characteristics, uniqueness and variety of *Rhododendron* as well as designed, or redesigned, two tri-fold hand-outs for

(Continued on next page)

Election of District Directors continued

the public—"Selection, Planting and Care of Rhododendrons" and "Rhododendrons in Containers." Publication costs for the tri-folds were shared between the five chapters with contributions from a number of retail nurseries and rhody gardens. We also provided an educational booth at the local "garden art" event.

With the transitions going on with the ARS front office, I felt it wise to have continuity within the BOD, so I offered to carry on for a second term. I want to thank the chapters within my District for their confidence in supporting my bid for re-election—of course, not supporting me would mean they would have to find another suc . . . er, candidate for the position..

District Director Alternate
Doug Keough

Living in the small community of Clearview, WA, Doug had the good fortune to have Loyd and Eddie Newcomb as neighbors. Their beautiful gardens and their passion for rhododendrons were infectious, and they invited the Keoughs to join the ARS in 2003. Doug is the current Pilchuck Chapter president, and has also served on Pilchuk's board. Since retiring in 2011, Doug has found more time to dedicate to rhododendron hybridization and propagation. Currently, he and his wife, Donna, are full-time groundskeepers. Their home, Keyhole Gardens, is on five acres with many varieties of Japanese maples, conifers, and hundreds of varieties of rhododendrons. Keyhole Gardens was featured on the private garden tour during the 2009 ARS convention in Everett, WA.

DISTRICT 7
District Director
Bob Warren

Bob is a retired engineer from Lucent Technologies (Bell Laboratories previously) and resides in Warren, New Jersey. He has been a member of the Princeton Chapter since 1979 and served as president of the chapter from 1998-2001. He has submitted many entries to Chapter Truss shows in his district, served as a Truss Show judge for the NewYork and Philadelphia Chapters, and opened his garden to many tours for Rhododendron enthusiasts and friends. He was presented the Bronze Medal by the Princeton Chapter in March 2002.

He designed a nearly invisible deer fence around his 1-1/2 acre rhododendron and azalea garden using coated wire rope, stainless turnbuckles and rust-resistant clamps. The clamp itself was designed and patented by him since all clamps on the market place were either not rustproof or very expensive. He is in the process of trying to restore his garden now after 40 trees were uprooted during Superstorm Sandy and caused havoc to his plantings and greatly reduced his shade cover.

Other hobbies include being an active member of the Tri-State Hiking club, Ramapo Ski club, Morris Area Freewheelersbike club and New Jersey Nordic Ski Club. He is

(Continued on next page)

Election of District Directors continued

treasurer of the latter club for the past 10 years.He holds a BA from Bowdoin College, a BS degree from Columbia University and an MS degree from Stanford University. He is married and has two grown children.

District Director Alternate
Marianne Feller

Marianne Feller is a former Human Resources Consultant, who was employed by a major Manhattan insurance company, and is currently the Court Clerk in the Village of Old Field, where she resides with her spouse, Bruce. When not conducting the business of the Court, Marianne can be found alongside Bruce in the garden at Two Grey Achers. She functions as the Under Gardener, with specifically assigned tasks. Marianne can weed with the best of them— thousands of weeds a day come under her mighty tug; and pruning of selected plant material—never rhododendron! Her love of the outdoors makes light work of these gardening chores. Active in the New York Chapter for more than 25 years, Marianne is the Membership Chair, serves on the Board of Directors, and shares responsibility with Bruce for the Early and Main Flower Shows, the annual luncheon and arranging speakers for Chapter meetings. For their many years of service to the Chapter, the Fellers were awarded the Bronze Medal in 2009. Marianne and Bruce co-chaired the ARS Convention in 2010 and the Fall Regional Conference in 2015—both held on Long Island. They maintain Associate Memberships in numerous ARS Chapters in the East. In addition, they are active in the Azalea Society of America and the American Conifer Society.

DISTRICT 10
District Director
Hale Booth

Hale Booth has a consuming interest in woody plants and has been an active member of the American Rhododendron Society for approximately 25 years. During this time he has killed a lot of plants. Hale and his wife Susan garden on Signal Mountain near Chattanooga, Tennessee, where they maintain an ever expanding eclectic collection of rhododendrons, azaleas, bamboos, camellias, magnolias, hollies and other interesting plants.

Hale is now completing his first three-year term as ARS's District 10 representative on the ARS Board and has been re-elected for a second term along with Districts 10's returning Alternate Director Jackson McCarter. Hale is very interested in working with the ARS Board to help continue the boards work to structure and develop plans necessary to make the ARS financially sustainable over time. Booth also is a member of several other national plant societies and frequently attends their national meetings and has served on several national boards of directors; as a result he realizes these financial challenges are not unique to the ARS. In addition he presently volunteers as

(Continued on next page)

Election of District Directors continued

chairman of the Azalea Society of America's Azalea Research Foundation Committee.

Booth is also the past Chapter President of his regional Tennessee Valley Chapter of the American Rhododendron Society. He served as Chapter President for approximately 8+ years and now writes the Chapter Newsletter and is very active with the chapter's annual plant sale fund raiser. From this background he has experience will the logistics and issues local chapters deal with.

For many years Hale worked as Deputy Director and then Executive Director of a regional planning agency serving southeast Tennessee and northwest Georgia. As a reprove from slinging mulch and weeding, he currently manages BrightBridge Inc. a non-profit economic development organization providing innovative financing for small business expansions and other financial services for local governments and non-profits. He is a charter member of the American Institute of Certified Planners.

District Director Alternate
Dr. Jackson McCarter

Jackson inherited his love of gardening from his grandmother and mother, of Barnesville, Georgia. His father was a career Air Force officer, so growing years involved a lot of moving around the country and sometimes across oceans. He met his wife of 57 years, Pamela, in 10th grade at Washington-Lee HS in Arlington, Virginia. He majored in English Literature at Lehigh University in Bethlehem, Pa., received his M.D. from the University of Pittsburgh in 1963, and did fellowship and residency training at Duke University. This was followed by a stint in the U.S. Air Force, working on tropical infectious diseases, living in Manila and traveling to various parts of Asia. They settled in Greenville County, S.C. in 1969, where they have remained, and where Jackson continues to practice, and is still learning, diagnostic pathology. Interest in rhododendrons started in the early 1970s, beginning with a trip to meet many of the major figures in rhodos in the Pacific Northwest. In particular, Cecil Smith and Carl Phetteplace ignited an interest in rhododendron species, very few of which eventually proved to grow well in South Carolina with its summer heat and droughts. Jackson and Pamela live in a hilly wooded 128 acres in the Blue Ridge foothills north of Travelers Rest, SC, where they share their naturalistic "garden" with families of bears, coyotes, deer and largemouth bass. The intent of the "garden" is to appear that the rhodos "just grew there wild." Surprisingly, deer have not yet eaten the rhodos, possibly due to their preference for *Lonicera japonica*. The rhodos include species in the Fortunei series, *R. hyperythrum, R. degronianum* including yaks and other subspecies, relatively few hybrids, and many native azaleas. Many plants were grown from the ARS Seed Exchange. Other hobbies include photography and bicycling up famous hills.

Jackson currently is Treasurer, Webmaster (www.se-ars.org) and Past President of the Southeastern Chapter, is a recipient of the Bronze Medal, helped with the 2012 and 1994 ARS Conventions in Asheville, was a founding member of the William Bartram Chapter, and has been a Life Member of the ARS since the '70s.

Society News

Letter to the Editor

Thanks!

EDITOR:

In the spring of 1970, I joined the Siuslaw Chapter of the ARS at their charter meeting. The annual dues at that time was $10 per year, and a life membership was $200. That was twenty year's worth of yearly dues, so year after year I paid my renewal. We are now in 2015, the dues is $40 and a life membership is $1000!

I am now the oldest, oldest active member in my chapter. I have helped in many ways in chapter projects, and over the years I have been awarded two Bronze Medals. I also belong as associate member to the Eugene, Portland, and Southwest chapters. At the last June chapter meeting, I had a surprise! It was announced by our chapter president Larry Jenson that from then on, my yearly membership dues would be paid by the chapter, one year at a time. So, after all these years I now have a life membership.

Gene Cockeram

[**Editor's note:** I feel this is a well-justified thank you, and one that could perhaps be considered by other chapters for their long-serving productive members. On an aside, Gene has also contributed substantially outside his chapter, as he was the one that developed, coordinated and marketed the rhododendron 'The Pink Ribbons,' with profits from its sales donated to help find a cure for breast cancer. This rhododendron, one of "Gene's Creations" was a color match for the breast cancer awareness pink.]

Chapter/District/Special Donations 8/29/2015 - 11/19/2015

Donor	Amount	Source
<u>General Fund</u>		
Barbara Smith	$300.00	In memory of Thomas Smith
Martha Hill	$100.00	In Memory of Gwen Mayne
Kenneth & Nadine Graham	$100.00	In memory of Nick Nickou
New York Chapter	$30.00	Chapter donation
Victoria Chapter	$1,514.09	Convention donation
Susan Metcalfe	$50.00	In Memory of Ernest & Evelyn Metcalfe
Robert & Barbara MacArthur	$20.00	In Memory of Ernest & Evelyn Metcalfe
<u>Endowment Fund</u>		
Greater Philadelphia Chapter	$400.00	Chapter donation
Marilyn Davis	$50.00	In memory of Robert A. Mitchell
Linda & Marvin Fisher	$100.00	In memory of Albert J. Muller
Margaret F. Monitto	$50.00	In memory of Albert J. Muller
James Mitchell, Jr.	$50.00	In memory of Robert A. Mitchell
Middle Atlantic Chapter	$100.00	In memory of R. Nachman
<u>Nepal Relief Fund</u>		
ARS District 7	$1,000.00	New York Chapter

O. Kuntze: A Loose Cannon?

Donald Voss
Vienna, Virginia

The *International Code of Nomenclature for algae, fungi, and plants* [ICN] states that valid publication of names for organisms of the Spermatophyta [seed plants] and Pteridophyta [ferns] is treated as beginning at 1 May 1753, the date of publication of Linnaeus's *Species Plantarum* (McNeill 2012).

Guidance relating to the naming of plants was published by Linnaeus in his 1737 *Critica botanica* and 1751 *Philosophia botanica*. More detailed rules were formulated by Augustin de Candolle in 1813, and in 1867 the *Lois de la nomenclature* by Alfonse de Candolle were approved by an international botanical congress in Paris. In none of these recommendations and rules was there reference to a starting date for the nomenclature of vascular plants (Lawrence 1951). It must be understood that the procedures set forth in the aforementioned recommendations and rules—and, indeed, in the ICN and its earlier editions—do not have legal force. They define good practice and are widely accepted by botanists who recognize that adherence is in the interest of science. That does not mean that all well-meaning botanists will agree on matters such as whether to place azaleas in the genus *Azalea* or *Rhododendron.* Some examples of botanical ping-pong are:

- *Azalea prinophylla* Small (1914) → *Rhododendron prinophyllum* (Small) Millais (1917)
- *Azalea furbishii* Lemon (1940) → *Rhododendron furbishii* (Lemon) Leach (1959)
- *Rhododendron alabamense* Rehder (1921) → *Azalea alabamensis* (Rehder) Small (1933)
- *Rhododendron cumberlandense* E.L. Braun (1941) → *Azalea cumberlandensis* (E.L. Braun) Copel. (1943)

Before the publication of *Species Plantarum* in 1753, nearly all Latin scientific plant names were polynomials (phrase names). For example, one of the names listed by Linnaeus in the synonymy of *Rhododendron maximum* is Mark Catesby's 1731 *Chamaerhododendros, lauri folio, sempervirens, floribus bullatis corymbosis.* After 1753, the use of binomial plant names consisting of a genus name plus a specific epithet spread rapidly and now remains a cornerstone of the ICN. It was a welcome change.

In the interest of having one correct scientific name for a plant, nomenclatural rules dealing with matters such as priority, typification, valid publication, and the formation of names continued to evolve—not without dissent. Indeed, from the 1890s to 1930, a group of American botanists observed the rules of an American code. Compromise was reached and the code became truly international in 1935.

There is, however, always the possibility that contrariant individuals may ignore the rules or interpret them in a disruptive manner. In 1891, Carl Ernst Otto Kuntze aka O. Kuntze or, in his own writings OK., published *Revisio generum plantarum.* His entry dealing with *Azalea* L. asserts that before 1753, Linnaeus did not treat azaleas and rhododendrons in separate genera but only in *Azalea,* and that name must be retained. In 1737, Linnaeus had replaced the long, previously used name *Chamaerhododendros* with the shorter *Azalea.* When he split the genus in 1753, he used the old name with the omission of "Chamae" to form *Rhododendron.* To Kuntze, this was not proper because *Rhododendron* had been used by other authors prior to 1753 and therefore, he stated, authors who wanted *Azalea* and *Rhododendron* separated would have to rename all *Rhododendron* species under *Chamaerhododendros*. Whether motivated by his peculiar personal interpretation of the recommendations and rules generally observed by others or by a desire to save us all from having to spell and utter *Chamaerhododendros*, Kuntze proceeded to transfer more than 100 species from *Rhododendron* to *Azalea.* The list began with "Azalea," followed by the specific epithets and their authors, with "OK." at the end of the list. A sample of the species so transferred (as shown by Kuntze), includes: albiflora (Hk.) . . . anthopogonodes (Maxcz.) . . . Augustinii (Hemsl.) . . . catawbiensis (Michx.) . . . Chapmannii (A. Gray) . . . daurica (L.) . . . decora (L.) . . . formosa (Wall.) . . . Fortunei (Ldl.) . . .!

In 1905, the Third International Botanical Congress met in Vienna. According to G.H.M. Lawrence (1951), this was "the first botanical congress that was functionally international in character, and that gave extensive consideration to nomenclatural matters." At that meeting, the 1753 starting date for vascular plant nomenclature was added to the international nomenclatural rules, making pre-1753 names such as *Chamaerhododendros* irrelevant. It is not unreasonable to suppose that O. Kuntze's treatment of the *Azalea* vs. *Rhododendron* issue, as well as transfers affecting other genera, contributed to support for the new rule!

References

Kuntze, Carl Ernst Otto. 1891. *Revisio generum plantarum.* Vol. 2. Leipzig: Arthur Felix. 635 pp.

Lawrence, George H.M. 1951. *Taxonomy of vascular plants.* New York: Macmillan Co.: 823 pp.

Linnaeus, Carl. 1753. *Species Plantarum* Vol. 1. Facsimile edition for the Ray Society (with introduction by W. T. Stearn). London: British Museum (Natural History). 1957. 566 pp.

McNeill, J., F.R. Barrie, W.R. Buck, V. Demoulin, W. Greuter, D.L. Hawksworth, P.S. Herendeen, S. Knapp, K. Marhold, J. Prado, W.F. Prud'homme van Reine, G.F. Smith, J.H. Wiersema, and N.J. Turland. 2012. *International Code of Nomenclature for algae, fungi, and plants* (Melbourne Code; ICN). *Regnum Vegetabile* Vol. 154. Koenigstein, Germany: Koeltz Scientific Books. 208 pp.

The Andersons: A Team Both in Life and in Hybridizing

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Photos by the author

[Editor's note: This article is the fourth (see online *JARS* 67(3), pp. 28-31; *JARS* 68(2), pp. 5-11; and *JARS* 68(4), pp. 5-12) submission from anonymously funded summer interns whose goals are to provide "oral histories" of prominent member hybridizers, growers, and nursery owners while we still have these folks with us. This concept is really great, as it both honours the significant person discussed and as well gives experience and opportunity to journalism and communications students to interview and write an article for publication. This submission is from the eastern USA, the area where this intern resides. I encourage other ARS members to consider funding a student to continue this worthwhile endeavor.]

Hybridizing rhododendrons is a lofty pursuit that requires healthy doses of patience and artistry. Allan and Shirley Anderson approach the craft with a secret ingredient: science. The Anderson's have made over 1,200 hand-pollinated crosses and grown more than 20,000 seedlings since they became fascinated by rhododendrons in late-1960s. All of these creations began in their gorgeous backyard in Northeast New Jersey. However, these innovations truly began many years before, in the science classrooms and chemistry labs where the Anderson's honed their craft.

The Anderson's careers in science—Allan as a chemist and Shirley as a high school science teacher—undoubtedly have contributed to their passion and success in hybridizing. Their training in the sciences is apparent in their meticulous approach to hybridizing. Sitting at their kitchen table, which overlooks several decades of rhododendron experimentation, Shirley produces binder after binder of specific notes about their work. The contents of these books range from basic observations to florid description of a plant's budding beauty. Hybridizing is certainly a blend of science and artistry, and the Anderson's approach to the craft shows their deep understanding of

'Promising Purple'.

both aspects. "Everyone should have an intense interest in something," Allan said. "It's a huge help when you retire because it keeps you busy."

The Andersons' Laboratory

A quick glance at the front of the Anderson's home does not reveal the extent of their passion—one could easily drive by without ever knowing what lies behind. But a walk through the backyard reveals an extensive series of carefully plotted and marked rhododendron beds. One thing is explicitly clear— this was no accident.

Everything they do begins in a small greenhouse that is attached to their home. The earthy, floral smell of the greenhouse is startling, given the frozen conditions in the winter when I visited them that await us outside. In here, the synthetic environment gives seedlings a fighting chance to be prepared for the harsher conditions that will await them later in gardens across the country. After first observing their property from the warm comfort of their living room, we walked through the winding dirt paths of the garden on a bitter December day. Touring the Anderson's home and garden was like walking through a living museum of rhododendron history.

The greenhouse opens out to the Anderson's backyard, which has been meticulously planned to allow visitors to tour the garden through paths that weave in between beds that contain rhododendrons at various stages of development. The back-edge of the property is lined with tall, almost menacing rhododendrons that loom over

‘Sea Gold’.

‘Wunderbar’.

their younger relatives below. These 20 foot (6 m) tall giants have been there for more than 30 years, and are some of the Anderson's first fruitful attempts at hybridizing rhododendrons.

A True Team

After our tour of the garden, we went back to the warmth of the kitchen for hot tea and cookies. Speaking with the Anderson's is a lesson in conversation. Shirley answered the bulk of my questions with thorough, detailed answers that outline the structure of their methods. Allan, the more reserved of the two, follows up with precisely chosen words that color in the meaning of what their work truly means to them. The Anderson's teamwork in conversation carries over into their work. Through their years of forging a work relationship, they have jelled into a well-oiled hybridization entity. They split up the work by roles: Shirley is in charge of the greenhouse and the seedlings, while Allan takes care of the planting and maintenance. "We try not to step on each other's toes," Allan said.

However, that doesn't mean that the couple is immune to the occasional dispute over best practices for hybridizing. "Sometimes Allan will try to give me advice about the seedlings, which I ignore," Shirley said with a tongue-in-cheek grin.

When asked to name a particular plant that they are most proud of, Allan and Shirley pause to consider a lifetime of successes. The delay suggests that I am asking the wrong question—this passion is not about reaching a mountaintop but is rather about the process of endless trial-and-error and of years of having newly blossoming plants to look forward to each spring.

Eventually, Shirley offers an anecdote from their early years in the trade. The couple had just started making crosses in 1975 when Shirley suggested that they cross a red rhody at the front of their house with a pink in their back garden. "Allan thought it was a stupid cross," Shirley said with a slight laugh, but it turned out to be a great plant. Shirley named it after one of their grandchildren, 'Amanda Joan Young'. It's a compact plant with flowers that with a nearly white center and a crisp pink outline around the edges and has been successfully marketed. The initial doubt only made the plant's success even more enjoyable! This type of disagreement is not atypical when two fervent hybridizers share both a home and garden. "We argue a lot because we don't always agree," Allan said. "But it works out."

First Interest

The Andersons had not planned this major undertaking when they bought their property. In fact, they hardly had gardening in mind at all. It took a fateful trip to the doctor's office for rhododendrons to grab their attention. "We were taking our daughter to a pediatrician when we saw rhododendrons in the yard," Allan said. "Our eyeballs just lit up, and we've never been the same since."

A seedling bed watered by drip tapes and automatic timers.

Test Bed cuttings grown from promising new hybrids.

The Anderson's wasted little time before diving into their newfound interest. They started participating in the ARS Seed Exchange in the mid-1970s, which lead to their first registered cross in 1976. Although their early developments were successful, the Andersons explained that the hybridizing community was quite competitive in the 1970s. "Hybridizers used to get very jealous of each other, which made them private about their own creations," Shirley said. "There used to be fights in the 1970s and 1980s, people would tell each other lies and there was a crazy demand at plant sales."

The community is far more collegial today. Hybridizers regularly share tips and tricks for success on a popular "Yahoo! Message Board," and discuss their hybridization methodologies at ARS meetings.

The Andersons travel to the annual ARS convention each year as it gives them both a chance to learn about what the other experts are working on, and perhaps most importantly, to swap stories with like-minded people who share their unique obsession. "Our kids thought we were crazy when they were younger, and well, they still do," Shirley said.

The Andersons have three grown daughters, who, while not taking up the rhododendron pursuit themselves, have grown to appreciate their parent's passion. The couple has been retired for more than 20 years, and they credit their hobby as a key reason for their health. "It's very important to have something that you're excited about after you retire," Allan said. "We really have something that we can throw ourselves into."

The cold December day during which the Anderson's showed me their garden was a warning of the long, harsh winter that was soon to come. The Northeast United States was soon pummeled by record-breaking snow totals, a fact that perhaps surprisingly for the average gardener, was a welcome sight for a serious hybridizer. "A mild winter is good for gardeners but bad for hybridizers," Allan said. "It doesn't give you a chance to really test the plants."

A great cross needs to create more than beautiful flowers. It must pass a four to five year culture test in withstanding the weather elements it would face in gardens across the county before the Andersons can be confident that it is sufficiently hardy for widespread distribution. "Most people regard eastern rhododendron hybridizing as an effort to overcome northeast winter cold temperatures and perhaps hot summers as well," Allan said.

Then Anderson's home is further inland than that of many other eastern coastal rhododendron hybridizers. Their drier air provides a more different "laboratory" to test the vigor and habits of their creations, giving them battle-tested plants that can withstand the cold climates of other gardens around the world.

Plants rated equally by minimum temperature can vary significantly in performance when grown in gardens across a wide range of eastern North American climates. Low relative humidity is also a vital factor, especially when it occurs along with low

'Sun Dust'.

temperature. Maritime climates, like those of Long Island and Cape Cod, are less damaging to leaf or bud tissues at 0° F (-18° C) than are more inland climates.

One malady that the Anderson's share with many gardeners is their constant effort to keep deer away from their plants. Their wooded, suburban location means that deer are plentiful, and often hungry for rhododendrons. As we speak over the phone, Shirley sees three of her age-old foes marching through her beloved garden and takes a quick break to ward them off. "They really are our nemeses," Shirley said. "I usually go out and chase them off."

'April Rhapsody'.

A Budding Spring

When we last spoke, the Andersons were eagerly anticipating the upcoming spring season. The last of their snow was melting, the ground was thawing, and their smaller plants were finally visible again. Spring brings feelings of rebirth and hope for many, but perhaps more so for the avid hybridizer.

The arduous winter makes this spring particularly special for the Andersons. The couple casts off their side hobbies (woodworking for Allan, pottery for Shirley) and venture back outdoors to their garden sanctuary where the new season always holds something they've been anxiously looking forward to. "There's a bed near the side of the house that we call the Anderson Bed," Shirley said. "It has some really promising plants that we've grown from cuttings, and we have a chance to watch them grow close together."

'Little Red'.

The spring is the Andersons' opportunity to see if their recent experiments will be successful. Years of trial-and-error have given them a tremendous amount of information to build strong hypotheses about new crosses, but there is always an element of unpredictability with this craft.

Their scientific curiosity has turned a spark of interest in these unique plants into a full-blown passion and every year it gives the Andersons something amazing to wait for as the seasons change. "Hybridization is not an exact science as much as you would like it to be," Allan said. "We're still trying to find that perfect plant," Shirley concluded.

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The Role and Opportunity Presented by Obtaining Unexpected Results or Serendipity in Hybridizing Rhododendrons

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For millennia, man has domesticated and cultivated plants for food, with progress in improving yields achieved relatively slowly over time from trial observations. Modern scientific approaches have more recently greatly improved food production, with funding from government, companies and universities. In contrast, progress in producing "better" rhododendrons has been accomplished by talented nurserymen and hobbyists. Despite the fact that some accomplished rhododendron hybridizers such as the late Dr. Gustav Mehlquist and August Kehr were university trained plant geneticists, funding has been relatively limited.

Currently, rhododendron hybridizing is still largely guided by the study of many reference (stud) books that list the parentage of crosses and describe the plant, flower and flower color of progeny, frequently with photos. When used, results and patterns noted from the successes of fellow hybridizers have often helped others in their efforts to achieve a specific outcome, particularly with regards to flower color. Chemistry, biology, and molecular and developmental genetic studies that affect the expression of color pigment within the flower petals have been less utilized. The traditional reliance on breeding patterns takes a lot of time as it requires the growing up of progeny and flowering to see results. In contrast, relatively simple chemical analyses can be done quickly using just flower petals. As a large number of progeny do not have to be raised with this approach, analyses can be much faster, adding another approach to the hybridizers "tool box" in planning crosses and predicting probable results. This article deals primarily with hybridizing for epidote rhododendron flower color—how to obtain certain flower colors and explanations and some speculation on how these colors develop.

'Helen Vieira'. Photo by Stan Southerland.

Delbert Brim's Hybridizing Program

It is not uncommon for even experienced rhododendron hybridizers to sometimes obtain a flower color that they would not have predicted from the parents used in a cross or from the flower colors involved. Such is the result serendipitously achieved by Delbert Brim's use of the hybrid 'Helen Vieira' (Southerland 2010), which has proven to be a valuable parent in bringing out colors not anticipated.

Delbert Brim, an accomplished rhododendron hybridizer, is from Mount Airy, North Carolina, where "he chooses the best of the best," noted his friend Marshall Stillwell, also a rhododendron hybridizer, and Brim stated "I like to try something new every year!"

'Helen Vieira'

'Helen Vieira' is a product of Dr. Robert Means' hybridizing program. Dr. Means of Winston Salem, NC, was a past Piedmont Chapter President (1998- 2002) and both Alternate Director and Director of District 10 (1998-2002). 'Helen Vieira' resulted from a cross of Grierosplendour Group × (white flowered *R. fortunei* seedling). This very colorful hybrid won Dr. Means the "Best New Seedling Award" at the 1994 ARS Anual Convention held in Asheville, NC.

'Consolini's Windmill'. Photo by Delbert Brimm.

'Helen Vieira' not only wins top awards at rhododendron flower shows but has also demonstrated great potential as a parent. It possesses an almost "Philosopher stone" touch [a legendary alchemical substance said to be capable of turning base metals such as lead into gold or silver] as a parent in transferring its good floral attributes to its offspring, particularly as a pollen parent.

Since writing the article on Delbert Brim's hybridizing program, I have had the pleasure to visit his nursery on several occasions during spring bloom. The display garden spans a partially wooded area with openings that are dotted with a number of raised beds growing berms for his hybrids, where his hybrids were blooming in a multitude of colors, ranging from shades of white, purple to yellow flowers, most with impressive blotches. Due to the distinctness of the large trusses, flowers and flower blotches, and plant habit, one could tell from some distances which of these were 'Helen Vieira' hybrids, even when the flowers were in many different colors, not just purplish red with blotches like 'Helen Vieira'!

'Consolini's Windmill' × 'Helen Vieria'. Photo by Stan Southerland.

Delbert Brim has made extensive use of this hybrid, breeding for a number of flower colors including white, pink, purple and even yellow. It is not too surprising that it transfers its flowers purplish red /purple hues to its offspring, nor is it surprising that this hybrid also dependably transfers its very dark purple red dorsal blotch and its almost as dark, purple red flower center. It is surprising to me, however, that when crossed with a yellow flowered hybrid, there can be yellow flowers in the offspring! Apparently, this hybrid, in addition to a "Philosopher Stone" touch as a parent, also frequently

possesses the "Midas Touch" [turns anything to gold] by turning purple to gold when crossed with yellow flowered hybrids. Not only does it transfer a yellow color but it actually appears to increase the intensity of the yellow color in many progeny! Brim has achieved this several times when crossing with a lighter yellow flowering plant, and he has even produced yellow flowers when crossing with cream flowering hybrids!

'Sammy Brim'. Photo by Delbert Brimm.

To understand the breeding success that Delbert Brim has achieved using 'Helen Vieira' as a parent, I first examine and analyze its parents and the parents of the rhododendron with which it was crossed.

This can be accomplished in two ways: 1) studying and noting the results and patterns of reproducible breeding behavior that has been obtained by others (observational method), and 2) scientific analysis of factors that affect color development and expression of color in general, and particularly within flower petals.

'Eye Catching' × 'Helen Vieria'. Photo by Delbert Brimm.

These two approaches can complement each other and suggest new results that might not have been suspected by using an observational method alone, and minimize the time to assess desired results.

Application of the observational method to obtain desired results in hybridizing is well exemplified by a pair of articles by Anthony D.M. Knights (Knights 2003a, b). He distilled the observations of many different hybridizers spanning many years and summarized the results of many crosses that had been made. Particularly useful are tables with the flower color one might think would be achieved from a cross with the actual result. For example, when crossing a purplish red flower hybrid with a pure red flower hybrid, one would generally expect a majority of the resulting flowers to be purplish red. Similarly, the cross of a hybrid possessing "pure red" flowers onto another hybrid with

'Janet Blair' × 'Helen Vieria', selection 1. Photo by Delbert Brimm.

"pure red" flowers is more likely to yield pure red (Knights 2003b). Why these results are expected will be explained later through the effects of flower petal pH on the final flower color. There are also appendices containing many plant characteristics in addition to flower color that result when hybrids are crossed with elepidote rhododendron species.

Knights (2003a) mentioned that a literature study revealed that the use of the "reddish orange forms of *R. dichroanthum* and some of its relatives" have been particularly successful in the intensification of yellow flower color. Note that he uses "intensity" of color and not just inheritance of the color yellow when referring to the effects of combining these species with hybrids that already possess yellow flowers. Using *R. haematodes* and *R. griersonianum* in crosses were also found to help intensify yellow color (Knights 2003a). The use of hybrids that contain these species, such as 'Fabia', 'Mary Belle', 'May Day' and other similar hybrids are also useful in obtaining or intensifying a yellow flower color. Hybrids derived from the species of subsection *Fortunea*, such as *R. fortunei* subsp. *discolor*, *R. fortunei* subsp. *fortunei* and less frequently *R. decorum,* were also mentioned as species that "accept yellow more easily than the various white Pontica species" (Knights 2003a).

Relevant to my analysis of the colors obtained among Delbert Brim's 'Helen Vieira' crosses are two hybrids mentioned and recommended by (Knights 2003a). These hybrids are particularly important for obtaining yellow or tropical-colored flower colors. So-called tropical-colors are mixtures of various, usually bright, colors that can include yellow, orange, apricot, pink and others. The first hybrid is the second generation Charles Owen Dexter hybrid 'Janet Blair'. This hybrid probably contains *R. fortunei* and because of it being late blooming, also *R. discolor,* and in my opinion *R. decorum* as well. 'Janet Blair' has been used extensively by both East Coast and West Coast hybridizers because of its deserved ability to transfer yellow flower color, as well as other

good plant qualities (Knights 2003a). The second hybrid is the Joe Gable hybrid 'Mary Belle', ('Atrosanguineum' × *R. griersonianum*) × (*R. decorum* × *R. haematodes*) (Knights 2003a). Several of the species in this cross were mentioned by Knights as either "friendly" to the transfer of yellow color or potentially important in intensifying yellow flower color. In analyses of the parentages of Delbert Brim hybrids, the significance and importance of these species and hybrids becomes apparent.

('Janet Blair' x *R. decorum* yellow form) × 'Helen Vieria'. Photo by Delbert Brimm.

The results of some of Brim's 'Helen Vieira' crosses would be expected using the observational method, but recent research on expression of flower color adds how and why this occurs. While the flower color results obtained by crosses such as 'Sammy Brim' and some 'Janet Blair' × 'Helen Vieira' crosses could be predicted by the observational information, reasons why these results were actually obtained are unclear.

It was not expected by me that good yellow flowers would be obtained when crossing the purplish pink to red flowering 'Helen Vieira' on to plants that have light shades of yellow or just yellow in their background parentage. Getting yellow flowers from reddish purple flowers × yellow flowers is curious!

Knights (2003a) stated "The inheritance of color in rhododendron is quite complex and not precisely understood." There is no single gene that controls color and there are no precise results of dominance or recession that can be applied when planning hybrids. Actual flower color depends on the presence and relative intensities of several chemicals in the surface and underlying tissues of the flower. It is the inheritance of these coloring chemicals and their relationships that still needs to be more fully determined."

There are many factors that control and influence how the final flower color develops and is expressed within the flower petal and its cells. Understanding the underlying genetic mechanisms by which this occurs has only recently been developed through advances in cell chemistry, biology, and molecular biology and genetics. With this understanding, the results of hybrid crosses that before did not seem intuitive can now be explained and dependably utilized.

Paul Rogers (2008, 2009) and others discussed this, and their explanations fit quite well with Knights statements and address many of these topics. It will be suggested that this "friendliness" to the transfer of yellow color can also be explained at least in part by both the pH within the flower petal and suppression of flavonoid anthrocyanin production.

Useful Genetic Terminology

Elepidote rhododendrons usually have two sets of chromosomes, the same as human beings, which is known as diploid. Diploid rhododendrons have twenty-six chromosomes, or thirteen pairs. One set of chromosomes is inherited from the female ovum and the other from the male pollen at fertilization, resulting in two sets (2x). Each of these reproductive cells prior to fertilization has ½ the number of the fertilized egg, and so the ovum and pollen are haploid. There are, however, a few elepidote and lepidote rhododendrons that possess multiple sets of chromosomes. This condition is known as polyploidy and they usually occur in elepidotes in multiples of two, with tetraploids (4x; four sets of chromosomes) being the most common. Examples include 'Gentle Giant' and 'Horizon Monarch'. There are also triploids (3x) which possess three sets of chromosomes and an example of a triploid is the outstanding red flowering 'Taurus.' Multiple sets of chromosomes can greatly complicate the explanations of hybridization results, but luckily, I do not see a clear case of involvement of polyploidy in the crosses presented here.

Chromosomes consist of genes, the fundamental structures of heredity for multicellular organisms, and within genes are strands or segments of DNA that code for specific purposes. One gene is inherited from the female parent and one from the male. Forms of genes are known as alleles, and alleles that code for variations of the same trait are known as "homozygous" while those that code for different trait variations are called "heterozgotes," or the condition heterozygous. Genotype refers to all genetic material in an organism, not just the traits we observe with our eyes. The traits that we observe with our eyes are known collectively as the phenotype, or individually as phenotypic traits.

Alleles do not have to be identical and there can be apparently nonfunctional enzymes formed in biosynthetic pathways influenced by one or both alleles. This can result in reduced color if there is only one allele supporting a functional pathway, or no color when both alleles generate nonfunctional enzymes in biosynthetic pathways (Rogers 2008a, 2009). There are several biosynthetic reaction points produced by that allele that can be disrupted to result in no color. However, the apparent final color (phenotype) is not always lighter than a homozygous situation, as there can also be "intensifying" genes that increase a color or hue (Rogers 2008a, Rogers 2009). There are a number of species (*R. haematodes* and *R. griersonianum)* that no doubt contain many of these augmenting factors (cofactors/copigments), so even a hybrid with a broken synthetic line because of one or more influencing alleles can still have considerable color in its flower (phenotype).

General Factors Affecting Flower Color

General factors affecting flower color are flower pigment, light intensity, temperature and cell shape (Griesbach 1987). Other factors within a cell's vacuole, where the color is primarily determined, are primary color pigments, the stacking of similar pigments to

stabilize color and depth, metal ions, and pH. Accumulation of flavonoid anthocyanin pigments is affected by cell shape, but the mechanisms controlling cell shape remain unclear (To and Wang 2006). With rhododendrons as with most plants, pH is controlled within the cell vacuole and is buffered, although slight variations do exist. These slight pH variations can make a great difference in final flower color. This is unlike the situation in hydrangeas where flower color can be altered by changing soil pH. With a lowering of soil pH, hydrangea flower color changes from pink to blue.

Pigments Involved in Flower Color

Generally speaking, flower color is predominantly determined by two classes of pigments: flavonoids and carotenoids (To and Wang 2006). The most common flower pigments contributing to a range of colors are flavonoid pigments. Flavonoid flower colors range from yellow, orange, red and purple (To and Wang 2006, Rogers 2008a). Flavonoids are water soluble and are found within the cytoplasm of petal cells' vacuoles (To and Wang 2006, Rogers 2008a).

Carotenoid pigments are lipid-soluble (fat–soluble) pigments found embedded in the membranes of chloroplasts and chromoplasts and they affect red, orange and yellow pigments (To and Wang 2006). Very little is known about the biochemistry of carotenoids and chlorophyll as it relates to flower color (Griesbach 1987), and it is not known if carotenoid pigments influence flower colors in elepidote rhododendrons, although they are almost certainly present in other plant tissues. Thus, the flavonoid pigment group appears to be the major pigment group affecting the color of elepidote rhododendron flowers.

There are many classes of flavonoid pigments divided according to differences in their basic shared structure and the common core biosynthetic pathway (To and Wang 2006). Nearly all the enzymes involved in the pathways to the different flavonoid classes have been determined in the past few decades (To and Wang 2006). The largest class of flavonoids are anthocyanins, and these are responsible for the expression of red, purple and blue among others (To and Wang 2006, Rogers 2008a). The pH in the petal is also important to the expression and depth of flavonoid anthoxanthin pigments (Rogers 2008a).

It is well known that the pH value of the vacuole is acidic, around 5.5, and this weakly acidic condition is critical to stabilize anthocyanins (To and Wang 2006). In addition to affecting stability, any small pH change can have visible effects on flower color. In general, decreasing pH causes a redder effect and increasing pH causes a bluer effect (Rogers 2008a, 2009; To and Wang 2006). In elipidote rhododendrons, increasing petal pH increases the purple hue of the anthocyanin pigment, as true blue in not thought to be present in elipidotes (Rogers 2008a,b). The genes/pigments controlling red, purple and blue flower colors are the same, with the final color and hue determined by pH! All pH changes, however small, may have visible effects on flower color, but

how a plant regulates the vacuolar pH is not clear (To and Wang 2006). As there are at least six genes controlling pH (Roger 2008a), affecting or controlling the pH is not something that is easily influenced.

The stacking of flavonoid anthocyanin pigments and related co-pigments which are sometime colorless can also greatly affect the final color created by anthocyanins and greatly increase light absorption, thus again affecting the final color, depth of color and general stability of color (Rogers 2009).

The flavonoid anthoxanthin produces colors that range from white, colorless to yellow and presumably orange pigments (To and Wang 2006). A higher petal pH not only deepens purple (anthocyanins), but it also facilitates the expression and intensity of yellow pigments (To and Wang 2006, Rogers 2008a, Zhao *et al.* 2012). Anthoxanthin pigments are generally whiter in an acid medium and yellower in an alkaline medium (higher pH; Zhao *et al.* 2012). They, like anthocyanin pigments, are very susceptible to color changes when associated with minerals and metal ions (Zhao *et al.* 2012).

Rogers (2008a) presented relevant biosynthetic pathways of anthocyanins for red and purple with the enzymes involved that lead to the final expression of flower color. If any of these enzymes in the chain of syntheses are defective, then the color otherwise programmed by normal genes may not be manifested and pigment synthesis could proceed down other pathways to colorless and yellow flavonoids (Rogers 2009). There are six anthocyanin pigments and three that color red, purple and "blue" rhododendron flowers (Rogers 2009). A breakage in a synthetic pathway can occur at a number of points, and if it affects a point in any of the pathways to red and purple, the result is white flowers. This is why when "true breeding" (i.e., crosses among themselves) white cultivars such as the *R. catawbiense* hybrids, a predominance of colored offspring is produced (Rogers 2009). Apparently, the cultivars have different breakage points in the synthetic pathway and crossing them together can "fill the holes" in their individual pathways.

The flower color of *R. degronianum* subsp. *yakushimanum* and *R. hyperythrum* both fade from the flavonoid anthocyanin pink to near white. This is probably an example of instability of anthocyanin pigments in the presence of an unfavorable pH. Instability in the stacking of related flavonoid compounds or co-pigments are probably also involved in this fading. The fact that primary crosses with these species also almost always fade is further evidence. A higher intracellular pH is not only important in increasing a purple hue but is also important to the expression, i.e., the intensity of yellow (orange?) flower pigments (anthroxanthin), and stability of color.

Next to the primary genes for pigment production, genes influencing petal pH are almost as important. Also important is that corolla color and the blotch color are inherited separately, both with regard to pigment, pH and other mentioned factors (Roger 2008a). I speculate that the center blotch or spot is also separately inherited.

This is very important to explain flower colors resulting from the Brim crosses,

particularly flowers with yellow and tropical colors. Rogers (2008a) "teasingly" mentioned crossing a purple flowered hybrid with a yellow flowered hybrid and creating not just a yellow flowered hybrid, but a bright yellow flower hybrid. Hybridizing is thus not like mixing paint colors (Rogers 2008a, 2009)! Rogers (2009) speculated that hypothetically, the cross between the deep purple hybrid 'Smokey' and the bright yellow 'Sunspray' could result not only in yellow flowers but also in the bright yellow mentioned (Rogers 2008a, 2009). It has been hypothesized that there are at least six genes affecting petal pH, and that tracking inheritance would be complicated. Rogers (2009) further speculated hypothetically how with proper combinations of pigment and pH, this could be accomplished in two crosses, and he outlined what these crosses would be using the punnet square method.

Brim's crosses achieved this result with just one cross with 'Helen Vieira'! He also achieved this more than once using different hybrids crossed with 'Helen Vieira'.

'Helen Vieira'

The flower and the truss of 'Helen Vieira' are large and the flower is a medium purplish pink with a dark purplish red dorsal blotch in the center of the flower that flows to the lower sides of the adjacent petals of the flower. The top of the blotch is specked with the same color. The center of each flower has a very dark, almost black, reddish purple "dot" on each of the five petals. Petal/corolla color and the blotch are inherited separately, and I believe there is some evidence that the "dot" is also inherited separately.

One parent, Grierosplender Group, is *R. griersoniaum* × 'Purple Splendor'. 'Purple Splendor' is one of the darker of the older purple hybrids (unknown *R. ponticum* hybrid) with a darker purple blotch. *R. griersoniaum* was previously mentioned as a species that can brighten or intensify the flower color of the hybrid with which it is bred, which it does in this case with the purple flavonoid anthocyanin pigment of 'Purple Splendor'. Its flower cells no doubt contain many if not all the factors for intensifying color (stacking of flavonoid pigment or co-pigments, metals and proper higher pH). It is probably also homozygous for pigment color, meaning that it has all the pairs of alleles for purple color and all of the enzyme biosynthetic pathways intact so as to maximally express this anthocyanin color. In addition, all the genes, possibly homozygous for higher pH for maximum expression of this color, are probably present. The other parent in the 'Helen Vieira' cross, a white flowered *R. fortunei* seedling, has non-functional alleles for the expression (biosynthetic pathway) of flavonoid anthocyanins, and hence its white color. As we will see, it also has the "friendliness" of the group (subsection *Fortunea*) for the expression of yellow color, i.e., a higher pH. We could conclude that 'Helen Vieira' is heterozygous for many of the above factors, yet the hybrid still manifests the dramatic colors in the phenotype (appearance) of its Grierosplender Group parent! This allows the segregation of some of its colorful floral traits to some of its offspring, but not to

others, as illustrated by the following:

'Sammy Brim' ('Tiana' × 'Helen Vieira') has a pure white flower with a dorsal very dark, almost black, reddish blotch more similar in color to the inner "dot" of 'Helen Vieira' than to the upper blotch of 'Helen Vieira'. The parentage of 'Tiana' is 'Sappho' × *R. degronianum* subsp. *yakushimanum* Exbury form. The flower color of this hybrid is not too surprising given the color of the parents, and this color would be predicated by breeding guides. Applying the information, this hybrid must have many breaks in the flower's flavonoid anthoxanthin production sequence, resulting in white petal color. The dark purple blotch points to genes for a higher pH and alleles for purple flavonoid anthocyanin, which are inherited separately from corolla petal color and pH alleles.

'Janet Blair' × 'Helen Vieria' selection one and 'Janet Blair' × 'Helen Vieria' selection two show variations on a theme. The flower of the parent 'Janet Blair' has a light pink/purple, almost white inner corolla, becoming darker at the corolla's outer edge. There is a large prominent gold bronze/brown dorsal flavonoid blotch similar in shape to 'Helen Vieria's, indicating anthoxanthin presence. Although the light colors of 'Janet Blair's corolla and petal show the presence of flavonoid anthocyanins, the petal's light color could indicate some broken links in one of the anthocyanin biosynthetic pathways and an unfavorable higher pH to expression of anthocyanin. This light color in hybrids selection one and selection two is darkened, respectively, by the addition of 'Helen Vieria's flavonoid anthocyanins to a purplish pink and pink color. The shape and color of the dorsal blotch and the inner ring blot of 'Helen Vieria' are largely preserved. However, in these crosses, the gold bronze/brown dorsal blotch of 'Janet Blair' is replaced by a purple blotch with a darker purple center, similar to 'Helen Vieria's. Apparently, the conditions for the expression of purple (anthocyanin and pH) are better met than those for the yellow flavonoid anthoxanthin pigment. Although the flower changes seen in the two sister hybrids are similar in their differences from their parents the end results of the sister seedling flower color differ from each other dramatically!

The cross of ('Janet Blair' × *R. decorum* Yellow form) × 'Helen Vieria' demonstrates what happens to the flower petal when one introduces yellow flavonoid anthoxanthin pigment into the cross with 'Janet Blair'. Not only does the corolla become yellow, but the outer blot becomes a darker yellow, with the inner ring/dot remaining dark purple. In these crosses, the gold bronze/brown dorsal blotch of 'Janet Blair' is replaced by a purple blotch with a darker purple center similar to 'Helen Vieria's. This cross results in an almost "perfect storm" with not only the introduction of yellow flavonoid anthoxanthin pigments and colorless flavonids (for petal/corolla colors) into the cross, but with many, if not all, the co-factors that potentially allow their expression. 'Janet Blair's "friendliness" to a yellow color also apparently works in reverse in that few true reds have come from crossing with it. The only one I am aware of is 'Ellie Green', a cross between 'Janet Blair' × *R. strigillosum*. Apparently the pH profile promoting yellow is so strong in 'Janet Blair and some others like *R. decorum* that only a true deep red species like *R. strigillosum* can swing the balance toward a lower pH that is necessary for the expression of true reds from flavonoid anthocyanins, as in the following:

'Eye Catching' × 'Helen Vieria'

This cross is very similar to the above cross ('Janet Blair' × *R. decorum* Yellow form) × 'Helen Vieria'. Undoubtedly, it has the same factors in play to allow yellow flower color to manifest itself.

It must be re-emphasized at this point that the yellow flowers resulting from crosses with 'Helen Vieria' are darker or brighter than the yellow/cream parent hybrids used on the other side of the crosses! Delbert Brim verified this in a conversation.

'Consolini's Windmill' × 'Helen Vieria'

'Consolini's Windmill' is a cross by Consolini, a gardener for the early pioneer rhododendron hybridizer, Charles Owen Dexter. Since Dexter made great use of the *Fortunea* subsection in his crosses, it is probable that Consolini also used his hybrids and their parent stock. We have suggested that his hybrids have a higher petal pH, indicating "friendliness" for the expression of the yellow flavonoid anthoxanthin. Some brown can be seen in the base of the great outward flaring blotch, which fades to white as it moves up the blotch. Crossing 'Consolini's Windmill' × 'Helen Vieria' lights up this blotch with greenish yellow to bright brownish yellow, this freckled with darker spots as it cascades its way almost to the flower's inner rim. The source of the yellow is a mystery, with maybe only a bumble bee knowing it for sure.

Summary

Sometimes intuition or "a hunch" is just an expression of unspoken or unarticulated knowledge of which the individual does not have a technical or scientific explanation! Some hybridizers past and present just seem to have an almost innate ability when it comes to making good crosses.

On the other hand, author John Milton remarked, "Luck is the residue of design" (or planning?). Roman Philosopher Seneca said that "luck is what happens when preparation meets opportunity." An un-verbalized or unarticulated knowledge of the plant material being used would seem to represent preparation and design.

Each observational cross to achieve a targeted result represents a potential ten-year plus experiment, so any scientifically-based hybridizing knowledge that can shorten that span should be utilized. Anything that reduces the rationale for random crosses or "shotgun" crosses when a known result is desired is valuable.

Paradoxically, crosses that do not appear intuitive toward a targeted result and that serendipitously yield good results could point the way for targeted scientific inquiry to help elucidate hybridizing breakthroughs. Using cataloged patterns of breeding results along with scientific knowledge of cellular color development and the role pH plays adds another important tool to the hybridizers "tool box." Noting the color patterns in a flower and knowing what these patterns can tell us before researching the parentage of a plant can be useful for future hybridizing! Being able to "read" flower color patterns and incorporating this knowledge in crosses adds another powerful tool in hybridizing.

References

Knights, A.D.M. 2003a. Back Yard Hybridizing - How To Improve Success. Part 1. *J. American Rhodo. Soc.* 57: 39-44.

Knights, A.D.M. 2003b. Back Yard Hybridizing - How To Improve Success. Part 2. *J. American Rhodo. Soc.* 57: 97-101

Griesbach, R.J. 1987. Rhododendron Flower Color: Genetic/Cultural Interaction. *J. American Rhodo. Soc.,* Reprinted from Rhododendron Society of Canada, Winter 1987 (Vol. 12.2).

Kin-Ying To, and C.-K. Wang. 2006. Molecular Breeding of flower Color. *Floriculture, Ornamental and Plant Biotechnology* 1: 300-310.

Rogers, P. 2008a. Why Is It Pink, Daddy. *J. American Rhodo. Soc.* 62: 91-96.

Rogers, P. 2008b. Why Is It Pink, Daddy. *J. American Rhodo. Soc.* 62: 188-194.

Rogers, P. 2009. But I Don't like Pink, Daddy! *J. American Rhodo. Soc.*63: 67-73.

Southerland, S. 2010. Hybridizing Rhododendrons in the Shadow of the Blue Ridge Mountains, North Carolina. *J. American. Rhodo. Soc.* 64: 77-79.

Zhao, D.Q., C.X.G. Han, T.G. Jin and J. Tao. 2012. Isolation of UDP-glusose: Flavonoid 5-O-glucosyltransferase gene and expression analysis of anthocyanin biosynthetic genes in herbaceous peony. *Elect. J. Biotechnology*, 15 November 2012, Vol. 15 (Issue 6); *Mol. Biol. Rep*. 2012 Dec; 39 (12):11263-75. doi: 10.1007/s11033-012-2036-7. Epub 2012 Oct 10.

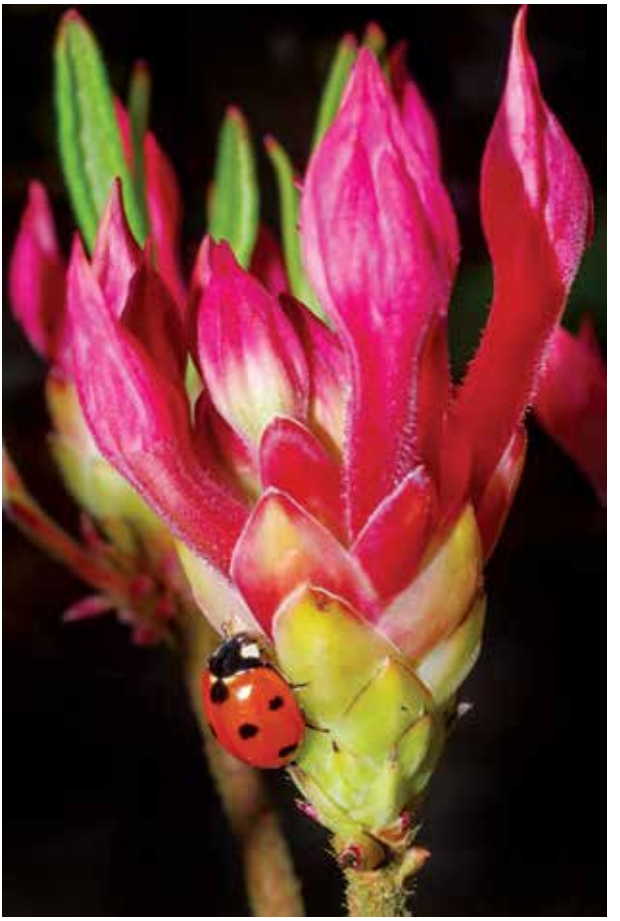
2015 ARS Photo Contest Results

Winner
Best in Contest

Don Hyatt
Potomac Chapter
R. minus “Smokianum”

Runner-up Best in Contest

Harold Greer
Eugene Chapter
R. canescens
'Varnadoes Pink'



The Three 2015 ARS Photo Contest Judges
1) Doreen Wynja (McMinnville, OR), principle photographer for Monrovia Growers, has worked on the last two books from *Sunset Magazine,* and is just finishing up the soon to be released book on *Easy Care*. She has been photographing for 30 years, with her primary work being commercially driven. Her imagery graces the pages of *This Old House* and *Fine Gardens* among other horticulture magazines. To contact Doreen or see her imagery, go to www.EyeoftheLady.com where you'll find an ever-growing Horticultural Library of her images.

2) Ken Beattie (Victoria, BC, Canada) is an award-winning photographer who specialises in exploring the techniques of digital artistry, with creations ranging from high quality photos, painting with light, and the blending of reality and fantasy. He currently leads the Digital Camera Special Interest Group at the Big Blue and Cousins (BB&C) Computer Club, where he organizes and directs photoshoots throughout the year. He teaches Basic Photography, Advanced Digital Photography, and Photo Editing, and

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

1) Flower, truss or spray

Winner: **Kristian Theqvist** (Finnish Chapter). *R. camtschaticum* 'Kaernehuset Red', Canon PowerShot SX60 HS, F4.5, 1/40, 100 ISO.

Runner-up: **Harold Greer** (Eugene Chapter). *R. habrotrichum.*

2) Plant in bloom

Winner: **Don Hyatt** (Potomac Chapter). *R. minus* "Smokianum", Nikon D7000, F7.1, 1/800 sec. (also see page 94)

Runner-up: **Kristian Theqvist** (Finnish Chapter). 'Elviira' X 'Blue Bell', Canon PowerShot SX20 IS, F4.0, 1/50, 80 ISO.

3) Landscape or plants in the wild or in gardens

Winner: **Kristian Theqvist** (Finnish Chapter). Azaleas flowering in my arboretum. Canon PowerShot SX20 IS, F4.5, 1/100, 80 ISO.

Runner-up: **Don Hyatt** (Potomac Chapter). *R. catawbiense* on Roan Mountain, Nikon D7000, F13, 1/640 sec, Exp. Comp –0.7

4) Foliage

Winner: **Don Hyatt** (Potomac Chapter). *R. cinnabarinum*, Nikon D7000, F5.6 at 1/125 sec.

Runner-up: **Rosemary Prufer** (Fraser South Chapter). *R. erosum.*

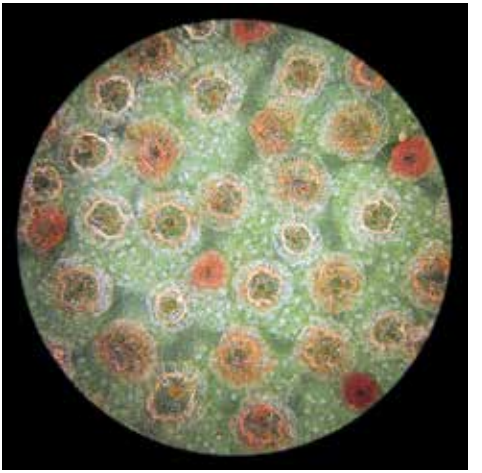
5) People, insects or animals

Winner: **Harold Greer** (Eugene Chapter). *R. canescens* 'Varnadoes Pink'. Also see p. 95.

Runner-up: **Linda Derkach** (Mount Arrowsmith Chapter). Photo from 2015 ARS Sidney Convention.

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

Winner: **Kristian Theqvist** (Finnish Chapter). A peek through a microscope on the scales of the leaf underside of *R. myrtifolium*. Canon PowerShot SX20 IS, F5.6, 1/15, 80 ISO.



Runner-up: **Harold Greer** (Eugene Chapter). 'Lem's Cameo' X 'Ken Janeck', HDR fliter.

Frost Flowers

(Modified from http://en.wikipedia.org/wiki/Frost_flower)

Fig. 1: Frost flower, Ozarks. (photo by Marvin Smith (Slomoz), http://flickr.com/photos/60053822@N00/3203335818/.)

A frost flower (Fig. 1) is a name commonly given to a condition in which thin layers of ice are extruded from long-stemmed plants in autumn or early winter. The thin layers of ice are often formed into exquisite patterns that curl into "petals" that resemble flowers. Frost flower formations are also referred to as frost castles, ice castles, ice blossoms, or crystallofolia.

Types of frost flowers include needle ice, frost pillars or frost columns, extruded from pores in the soil, and ice ribbons, rabbit frost or rabbit ice, extruded from linear fissures in plant stems. While the term ice flower is also used as synonym to ice ribbons, it may be used to describe the unrelated phenomenon of window frost as well.

Hair ice, frost beard (Fig. 2), ice wool, or feather frost describe a hairy, sometimes silky variant of frost flowers, extruded from openings of histological rays in the wood, which also requires the presence of fungus metabolism.

The formation of frost flowers is dependent on a freezing weather condition occurring when the ground is not already frozen. The sap in the stem of the plants will expand

Fig. 2: Hair ice, aka frost beard, taken at Mount Maxwell, Saltspring Island, British Columbia, Canada. (Photo by Kostian)

(water expands when frozen), causing long, thin cracks to form along the length of the stem. Water is then drawn through these cracks via capillary action and freezes upon contact with the air. As more water is drawn through the cracks it pushes the thin ice layers further from the stem, causing a thin "petal" to form. In the case of woody plants and (living or dead) tree branches the freezing water is squeezed through the pores of the plant forming long thin strings of ice that look uncannily like hair, i.e. "hair ice" or "frost beard".

The petals of frost flowers are very delicate and will break when touched. They usually melt or sublimate (the transition of a substance directly from a solid to a gas phase without passing through an intermediate liquid phase) when exposed to sunlight and are usually visible in the early morning or in shaded areas.

Examples of plants that often form frost flowers are white crownbeard (*Verbesina virginica*), commonly called frostweed; yellow ironweed (*V. alternifolia*); and *Helianthemum canadense*. They have also been observed growing from fallen branches of conifers and may contain enough hydraulic power to strip the bark off.

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 12, 2015, 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

(a) 'Joe Klimavicz'

'Joe Klimavicz'. Photo by Carolyn Beck.

Evergreen azalea: 'Haru-no-sono' (s) X 'Dorothy Clark'. H (1998), G (2001), N (2013), REG (2015): Robert Stewart, Springfield, VA. Flrs 2-3/bud, broad funnel, 2 inches (51mm) long x 3-3.5 inches (76-90mm) wide with 5 or 6 rounded, wavy, overlapping lobes. Bud, inside and outside of corolla: deep pink (48B) blending with strong pink (48C and 48D); random areas of white; with strong yellow green (145A) spotting over white in dorsal portion inside. Red style and filaments. Calyx: 0.25 inch (6mm) long, strong yellow green (143C). Lvs 2 x 1 inches (51 x 25mm), elliptic, rounded base, broadly acute apex, flat margins, moderate olive green (137C in spring, maturing to 147A in summer), semiglossy. Shrub 2.5 feet (0.8m) high x 3.5 feet (1.1m) wide in 10 years; open habit, heavy bloomer, flowers of heavy substance. Hardy to 0°F (-18°C). Flowering midseason (mid-May in Washington, D.C., area). Etymology of name: after Joseph Klimavicz, fellow hybridizer and friend of the registrant. Limited propagation as RBS 91; additional hybridizer's designation: 28-98.

(a) 'Ryleigh Paige'

Evergreen azalea: 'Elsie Lee' (s) X 'Satellite' (Klupenger). H (1991), G (1993), N (2015), REG (2015): Joseph Klimavicz, Vienna, VA. Flrs 2-3/bud, fully double, 3 inches (76mm) wide with 30 broadly rounded, overlapping, frilly lobes. Bud: strong purplish pink (67D to 68B). Inside: strong purplish pink (68B) shading to deep pur-

plish pink (68A) in center; faint blotch of strong purplish red (67A). Outside: strong purplish pink (67D to 68B). No stamens, majority of flowers lack pistil. Calyx: 7mm long, moderate yellow green (138B). Lvs 1.5 x 0.6 inches (38 x 16mm), elliptic, cuneate base, acute apex, flat margins, moderate olive green (146A), glossy, somewhat bullate. Shrub 4 x 4 feet (1.2 x 1.2m) in 10 years; intermediate habit, vigorous growth. Hardy to -10°F (-23°C). Flowering midseason (mid-

'Ryleigh Paige'. Photo by Joseph Klimavicz.

May in Washington, D.C., area). Etymology of name: after a niece of the hybridizer's son-in-law. Limited previous propagation under the hybridizer's number, LS-91-50.

(r) 'Standing Ovation'

'Standing Ovation'. Photo by Jim Barlup.

Elepidote rhododendron: 'Orange Prelude' (s) X ('Fortune' x ['Berg's Yellow' x *R. proteoides*]). H (2003), G (2009), N (2015), REG (2015): Jim Barlup, Bellevue, WA. Flrs 16/ball truss, funnel campanulate, 2 inches (51mm) long x 3 inches (76mm) wide with 7 wavy lobes. Bud: strong red (53B). Inside: pale yellow (11C) blending to strong pink (52D) margins, with a small deep red (53A) basal circle. Outside: pale yellow (11C) blending to strong pink (52D) at margins, with strong pink (52D) central rib line on each lobe. Calyx: 0.6 inch long (16mm), pale yellow (11C) with two 0.25-inch (6mm) dorsal flares. Truss 5.5 x 5.5 inches (140 x 140mm). Lvs 6 x 2.9 inches (152 x 73mm), elliptic, rounded base, broadly acute apex, flat margins, moderate olive green (147A); new growth deep bronze. Shrub 3 x 3 feet (0.9 x 0.9m) in 6 years; open habit. Hardy to 5°F (-15°C). Flowering midseason (late April in Seattle area).

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 regis-tration 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.

2016 ARS Photo Contest Instructions

The Contest is open only to ARS members in good standing as of the contest closing date. Judges and their immediate family (spouse, parents, siblings, and children) and household members are not eligible. By participating in the Contest, each entrant fully and unconditionally agrees to and accepts these Official Rules and the decisions of the Judges, which are final and binding in all matters related to the Contest. There are no prizes except bragging rights, and the Editor of *JARS* has the right to publish runner up and winning entries.

All photos submitted must have been taken between August 1, 2015, to July 31, 2016. Entries must be received by midnight PST, July 31, 2016. All entries should prominently feature either rhododendrons, azaleas and/or vireyas in the composition. Competition categories: 1) Flower, truss or spray; 2) Plant in bloom; 3) Landscape or plants in the wild or in gardens; 4) Foliage; 5) People, Insects, or Animals; and 6) Other, for creative or artistic effects of any kind that involves these plants. This could involve the use of software products like PhotoShop.

Photo Guidelines: 1) The Photo must be in .jpg, .jpeg, or .gif; 2) Images submitted should be sent by email and be of modest size, about 1024 to 1280 pixels in length and 480 to 768 in width, which would correspond to a dpi of at least 300 for a 3 x 5 in (7.6 x 12.7 cm) photo; 3) Cropping of digital images and minor adjustments to exposure and color balance is permitted for entries in all categories. Advanced image editing features available in software products like Photoshop should not be used except for entries in category six; 4) The Photo caption and/or description must not exceed 200 characters in length. Provision of some details about the camera and settings for each entry is also required, and for submissions in category 6, include a brief explanation of how the image was created; 5) The Photo cannot have been submitted previously in an ARS contest (chapter contest submissions are acceptable); and 6) The number of entries by any individual per category is restricted to two.

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Clara Curtis
Rudi Riggs
James Young
SWEDISH
Ingvar Einarsson
Anders Eliasson
Marianne Gyllstedt
Geyza Halasz
Mona Lundin
Ann-Karoline Nystrom
Hindrik Ounpuu
TUALATIN VALLEY
Kenneth & Kathleen Crabtree
VICTORIA
Lynn Bissell
Donna Chaytor
Gloria de Fields
Pamela Harrison
Susan Lindquist
Carol & Harold Turnham
WHIDBEY ISLAND
Kevin & Kathryn Hurtley
H. Lee Williamson

Deceased Members from 8/29/2015 through 11/19/2015

Nachman, Rosalie
Smart, Carolyn

Errata

Correction from the Editor, *JARS*, re *"Rhododendron mekongense – a News Species Record from Sikkim, India."*

In the online *JARS* 69 (2) pp. 35-42, there is an article by Bharat Pradhan *et al.* (2015) titled "A Note on *Rhododendron mekongense* - a New Species Record from Sikkim Himalaya, India." In hindsight, this article should not have been published in *JARS* as written, as Dr. Peter Jürgens, a member of the German Rhododendron Society, pointed out that four years earlier, he published in German in the Journal of the German Rhododendron Society (Jürgens 2011) an identical observation from the almost identical location reported by Pradhan *et al.* (2015). I had the Pradhan *et al.* (2015) paper reviewed by an anonymous expert reviewer, who unfortunately has now admitted that he missed this fact.

R. trichocladum/mekongense and its habitat near the roadside between Lachung and Yumthang at about 3500 m was photographed in 1981 by the long-term president of the Sikkimese J.D. Hooker ARS chapter, Keshab C. Pradhan (no relation to Bharat). After Jürgens' botanic trekking in 2011 in Sikkim, he visited Keshab in Gangtok, where Keshab showed him his photos and vouchers of *R. trichocladum/mekongense*, cited by Jürgens (2011). On an aside, in my recent trip to Sikkim in May, 2015 with Steve Hootman, we also saw this species at the same location, confirming that it is well established there.

Jürgens (2011) also pointed out that after long-term and intensive field observations of *R. trichocladum/mekongense* in its occurrences from eastern Nepal, Tibet, Myanmar (Burma) through to Yunnan, China, Cox and Cox (1997) documented that the specific diagnostic details of these two species change continuously from those of the first species to those of the second species, and so with no contradictory observations available, it must be concluded that these "two species" are in fact only one species that has clinal variation over distance. It must thus be named according to the rules of botany *Rhododendron trichocladum* Franch. (1886) and not *Rhododendron mekongense* Franch. (1898).

References

Cox, P.A. and K.N.E. Cox. 1997. *The Encyclopedia of Rhododendron Species*. Glendoick Publishing, Perth: 396 pp.

Jürgens, P. 2011. Erstnachweis von *Rhododendron trichocladum* in Sikkim (= First record of *Rhododendron trichocladum* from Sikkim.). *Rhododendron und Immergrüne* 12: 61-62.

Pradhan, B.K., S. Dahal, J. Nilson and D. Lachungpa. 2015. A Note on *Rhododendron mekongense* - a New Species Record from Sikkim Himalaya, India. *J. American Rhodo, Soc.* 69: 76-80.

Correction re *"Exploring for Rhododendrons in Western Yunnan, China, Part 2: The Upper Salween River Valley."*

In the online *JARS* 69 (3) pp. 5-21, the spelling of *Taiwania flousiana* is incorrect on page 15 in the photo caption and on page 57 in the index.