
Rock Garden
Quarterly
Spring
2013

NARGS

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CONTRIBUTORS

All illustrations are by the authors of articles unless otherwise stated.

Margaret Bowditch, member of the Delaware Valley Chapter and a volunteer at the Philadelphia Flower Show for 40 years, has served on boards of horticultural organizations in Philadelphia and Maine. After retiring from teaching and lecturing at age 78, she's concentrated on plant propagation and grows everything, from alpines to trees, from seed.

Al Deurbrouck lives and gardens on a small suburban lot in western Pennsylvania where he has a special interest in growing choice alpines in troughs. He is a retired mining engineer who feels any plant over a foot tall belongs in a border garden.

Harry Lumsden, is a gardener of some note, and a former member of NARGS Ontario chapter. He was recently made a Member of the Order of Canada, the country's highest civilian honor, in recognition of his outstanding work with trumpeter swans.

Ginny Maffitt is a retired teacher who volunteered at now-defunct Berry Botanic Garden. Now volunteering at Tualatin River National Wildlife Refuge, she's set up an herbarium collection, and leads walks emphasizing animal, native and pioneer uses of native plants. She has rock gardens on a sloping acre in Sherwood, Oregon, along with native plants, small ponds, songbirds, Pacific tree frogs, and penstemons.

Lillian Makysmowicz is chair of NARGS Siskyou Chapter and lives and gardens in Ashland, Oregon. Born in Sweden, she has had an interest in wildflowers since childhood, and has observed and photographed them in the western US and other mountainous regions of the world for some 40 years. Lillian has established a demonstration wildflower garden, gives presentations, and leads wildflower walks.

Malcolm McGregor lives in England where he teaches literature to retirees two afternoons a week, and from where he edits this publication. Saxifrages are his plant specialism, but he regularly gets seduced by difficult plants from other families.

Lori Skulski gardens in Calgary, Alberta, on a large city lot entirely devoted to native species, perennials, troughs and rock gardens. She enjoys spending the winter months growing plants, mainly alpines and rock garden subjects, from seed, while eagerly awaiting for the summer hiking season in the nearby Rocky Mountains.

John Watson and his wife and working partner **Anita** (**Ana R. Flores** for formal publications) live in Chile. They have explored the southern Andes extensively and are world-renowned for their work on rosulate violas, but also study *Tropaeolum* and *Alstroemeria* in depth. Their postal address is: Casilla 161, Los Andes, Chile, and their email <john.anita.watson@gmail.com>.

Ev Whittemore writes about herself "Crazy Ev Whittemore, now 82, and still worried about being bored, goes outside every day and tries to make her plants live and enjoy life as much as possible. She sometimes thinks her plants die just to be ornery and avoid the good life at Tall Pines."

Front cover: *Lewsia tweedyi* - Photo Contest class winner (detail) - Todd Boland

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From the Editor

ALTHOUGH IT'S STILL a few weeks away, I'm really looking forward to the Annual Meeting in Asheville in May. Like Ginny Maffitt, who writes about her plant society trips last year, I love plant society expeditions, and it's a wonderful time of year to visit North Carolina and the Blue Ridge in particular. North Carolina is one of the great places for *Heuchera* species so I am hoping to see a few of them as we explore different locations, but apart from all the plants I'm looking forward to, and the scenery, and the warm welcome, I'm also hoping to get a bit of birding in – Blackburnian and cerulean warblers are both on my wish list.

WHEN SPRING ARRIVES obviously depends where you live, but for any rock gardener it is a great moment as long-awaited flowers start to appear, bulbs show themselves, and seeds germinate. Lori Skulski's pictures, one of which is on the back cover, capture that moment perfectly, make me want to grow *Pulsatilla patens* alongside the other pulsatillas that I grow, and should remind those who do not frequent it, of just what lovely pictures can be found on the NARGS forum which is where some of these pictures of Lori's first appeared.

WITH THIS ISSUE we come to the end of John and Anita Watson's magnificent three-part survey of rosulate violas that I'm delighted to have been able to publish in the *Quarterly.* This has been a major undertaking for all concerned, with authors and editor reaching a happy working relationship, with the result being a landmark consideration of these exquisite plants, with around a quarter of all the species being illustrated.

In the first two parts they showed and discussed the perennial species; in this final part they turn to the annual species. John wondered whether NARGS members would be as interested in the annual species which have generally had far less attention than the higher altitude perennial ones. I'm sure many members might despair that these are yet more plants that they can't grow, although as Stephanie Ferguson showed in last year's award-winning article, it is possible, although difficult, to cultivate the perennial species.

But what is true for the perennial species is not equally so for the annual ones – I have flowered both *Viola polypoda* and closely-related *V. taltalensis* in the last couple of years. I've just sown seed of a number of rosulate viola species (being editor just makes you even more susceptible to the beauties contributors photograph and write about). Alongside the packets that I've bought, I'm delighted that one of the packets of seed that I'm sowing this year is again that of the annual *Viola polypoda*, but this seed was collected last year from my own flowering plant. I have to admit that the plant that flowered was nothing like as good as those John and Anita illustrate, but I would be very happy to get a second generation.

Garden Tour? Sure – no problem!

Ev Whittemore

IN FEBRUARY 2012 I came back from idle winter days in Florida anxious to check the garden. Surely there would already be a few things needed to prepare for the 2013 NARGS early spring meeting.

Basically I'm a mulcher. I choose rock mulch for the rock garden, patio and driveway; leaves go on the vegetable garden and woods; and woodchip for almost everything else.

There were many empty spaces in the woodchip mulch, which has a tendency to break down and disappear leaving areas for weeds. Two kinds are available, with each a different color, giving contrast. The lighter is direct from the sawmill so its contents are whatever wood is run through the mill each day. Because my hauler is a friend, my load comes the day it is prepared and thoroughly dry. Realizing the fresh mulch would place the plants in the garden at risk, a darker double-ground hardwood was selected. Forty yards were easy to spread with the wheelbarrow although, having tripped over a tomato plant the previous July and broken my right wrist, I took the precaution of using a brace.

With some of the garden areas now 4-6 years old, renovation was the next step. Plants were dug, saved for replanting, split for relocation if necessary and filed in containers of water, The soil was dug, roots removed, and amendments like sifted compost, sand, peat or bagged Miracle Gro added before replanting.

Never believe for one minute Tall Pines is on level ground. As each bed was replanted and thoroughly watered, the double-ground mulch was loaded into a wheelbarrow, pushed up the hill and arranged so each plant would not be touched by the mulch.

Two truckloads of a small quarry rock called Chat 78 mulched the rock garden after using the same methods of renovating. Instead of pushing mulch up the slope, the problem was to hold the wheelbarrow from speeding down the slope with the heavy rock. This was a long process. The day-to-day mulching took five months and normal garden jobs had to be put on hold or squeezed in.

While browsing a Lowe's in Florida I had bought bagged cactus soil which I cut with creek sand. Two large troughs were emptied, filled with this medium and planted with cactus and penstemons. Checking in a

Contrasting mulches of quarry rock and twice-ground hardwood spotlight plants and garden features

few months, I noticed the mix was black and was concerned until my sister told me Florida sand can be like this. Both types of plants seem to like this mix. Troughs add a lot to the garden but eventually must have attention. Their growing mix can need changing, plants trimmed or replaced, as does the mulch. Trough plants need more watering than open-ground plants but the effort is worth it.

Other jobs must be fitted in during mulching time. Compost material is collected thoughout the year, and time in early spring must be saved to sift through this. The property has many holly trees and the old dry prickly leaves fall not to be placed in the compost bin but spread outside the fence line. When holly, and other trees at the top of the phlox banking in back of the house, have dropped their leaves, I drag the ladder out, warn the neighbors I will be climbing, and clean the banking. Buffalo grass areas are occasionally cut and edged. Perennials need a light feeding of 10-10-10. There is a constant watch for moles and I take great delight in pouring gas, hot sauce, or ammonia (or a combination if I really mean it) into their holes. Sand is trickled down holes and the mulch replaced and stamped down. Pockets of poison ivy are constantly monitored and sprayed. 2012 found an unusually large number of these.

The summer of 2012 was not kind to plants. Watering was done in dry spells, worrying in wet, with plant loss mourned. Why does a gardener feel so sad when a plant struggles or dies?

Mid-July means the start of wild cherry tree seeds falling by the tens of thousands! If not picked up one by one (or two at a time if lucky) the next year is guaranteed to be the beginning of a forest of cherry trees. After almost three weeks of picking seeds I quit and call Bob Heath to remove two trees near the road drain. In 2011, he chainsawed five cherry

Woodchip mulch - double ground hardwood for a forest of *Picea glauca* 'Conica'

Renovation in process using broken sections of troughs at the ends

The beginning of a good winter's work

trees near the vegetable garden so I know early removal is the only answer. Two large cherry trees are left at the foot of the rock garden and I have plans for those after nearby plants are dormant. This takes me to the end of September. When the hummingbirds leave I can stain the porch and back steps.

Vegetable gardens are not self-caring. Choosing the top of a slope facing south meant this garden was at the edge of the woods. Always a fall job, the garden is hand dug to remove invasive tree roots, and covered with 10-12 inches of leaves. Tulip tree leaves fall first and are appreciated as a base mulch because they are crisp and disintegrate quickly. Leaf mulch improves soils, keeps moisture in, weeds off, and is neat. Extra leaves are hauled to bare spots in the woods. Planting means pulling back mulch, mixing in sifted compost, planting, and covering the rows with tented wire to protect against curious aquirrels. It is a constant growing-season job to produce chemical-free vegetables for me and my neighbors.

Leaves and pine needles continually drift down to cover the two large drains and have to be removed. Flower beds, the rock garden, and the juniper slopes need the same attention.

By this time, one starts thinking there are too many trees on the property, until I remember how pleasant it is to work in the shade on hot days. It is

time to call Bob Heath again to make a date to prune and limb trees, but not remove them. Since gardeners and visitors usually focus on lower plant material while walking, the branches of holly trees at head level can be dangerous. Limbs that have grown on other trees now shade plantings and are cut. And why is it that most of this necessary work is far from the truck so one needs to keep watch carefully while dragging branches through the garden?

Well into fall the black walnuts have fallen and need to be gathered before the squirrels plant them in the garden. This means a trip to the forest to offer the nuts to other squirrels.

The raspberry canes are cut and receive 2 yards of sawdust covering. Still feeling badly about plant loss during the summer I have decided to try a different method of planting and place an order. Each plant is repotted into "my" mix, watered and sunk into the sand frame where the root systems can develop for March planting. Placing small plants into the ground in fall is usually risky because of winter's freezing and thawing.

A truckload of mulch goes on the area surrounding the drain near the road. This must be a thick covering with the idea to cover all the remaining cherry tree seeds and prevent them from germinating. The mulch total spread now equals one hundred twelve yards.

Some cuttings need to be taken for the future and now is the time to collect late ones. Earlier cuttings taken are ready to be repotted for the

Mini-mountain of hypertufa

Mulching around a group of alpines, pitcher plants, and others

sand frame. The whiskey barrel pools need to be grubbed out, carnivorous plant trumpets carefully removed, and the best set aside for replanting.

One lily pool needs to be dug into the ground. For the first time this summer the water became too hot and the lilies suffered. This is a favorite drinking spot for mourning doves and cardinals who prefer it to a clean birdbath. The pool is only partially covered in winter for bluebirds, chickadees, goldfinches, cardinals, robins, and others not choosing to fly to the river for a drink. The squirrels also share this supply.

A mini-mountain "outcrop" of hypertufa

The slope on the site is easy to see

Daphne trough, close-up of stone figure

Close-up of a crevice trough

Every scrap of plant foliage I can find goes into the compost bin. Seeds are arriving at the post office box. Each trough needs to be checked, bare spots noted for attention next year. The long juniper edging along the drive needs a final trim. The back woodland gardens under trees need a thorough watering since rains don't always reach.

Much of the above is programmed into the long job of leaf collecting. By the end of the year Tall Pines looks neat and perhaps ready for the coming tour. The car is packed, house ready, and I again leave for a break in the warmer winter weather of Florida.

This time I plan on returning with at least six large bags of cactus soil mix for a spring project. The soil will be mixed with creek sand and used to build up areas in the rock garden. Perhaps the erigonums and drabas waiting in the sand frame will like this. Vegetable seeds come in smaller amounts and I remembered to bring my list. Pepper seeds will be planted as soon as I return, tomatoes a bit later.

I make certain the route back home from Florida takes me to Watsonville, Georgia, and the Stone Store for the excellent selection of small rock mulch for troughs. I fill my bags and continue to Penrose. Of course, the first thing a returning gardener does before unpacking the car is check the property. Although everything looks OK one knows tomorrow starts the cleaning, edging, trimming, mulching, plants, and repeating much of last spring's work with the exception of picking cherry seeds, now substituting pulling seedlings of those missed.

Garden tour? Sure – no problem!

All it takes is constant attention .... and a lot of mulching!

Photographs by Ev Whittemore and Cliff Booker (pp.101, 105 (top), 106 (top) and 107)

Lori Skulski

Pulsatilla patens

Winter lasts long on the Canadian prairies. But in Calgary, by late March, mergansers and goldeneye are starting to appear on the Bow River and skeins of geese are making their way north. The ground, frozen for months, is free of snow, at least until the next storm blows in, but it's clear that winter's grip is loosening. The grass is bleached and flattened, but already the pasqueflowers are starting to provide their magical early spring display.

The "prairie crocus" or "pasqueflower" is the harbinger of spring across the prairies, blooming more-or-less around that most unpredictable of holidays, Easter ... depending, that is, on the timing of the big thaw. Despite habitat becoming increasingly fragmented, wonderful sights can still be appreciated where the native grasslands have not been too severely disturbed. Bowmont Park in northwest Calgary is one of these areas.

Pulsatilla patens (or perhaps I should say *Anemone patens*) is not a rare species. Its natural range includes much of North America west of the Mississippi and east into Ontario, Wisconsin, Michigan and the northern edge of Illinois. As well, it can be found across northern China and Russia and into Europe. As might be expected from such a widespread species, it varies widely in colour across such a vast range. Ours are ethereal – petals of palest lavender are flushed on the reverse with violet, and enhanced by the silvery effect of long white hairs clothing the stems and deeply divided calyx. As the bloom advances, leaves emerge and the silvery effect is replaced by green. The spectacle continues, though, as showy flowers are replaced with almost equally showy purplish seed plumes. Happily, in this area, one need only visit the nearby Rockies and hike into the montane-to-lower alpine zones, in order to enjoy the bloom well into July.

Here, spring is coming – the hint of light in the sky in the morning, and again on the way home, lifts the spirits! And I'm looking forward to seeing this magnificent spring display again soon, in this little semi-wild oasis along the Bow River.

These photographs were all taken in April 2011 along the Bow River in Calgary, Alberta.

A Trough Show Honoring an Exceptional Plantsman

Al Deurbrouck
Photographs by Alan Peacock

THE DICTIONARY I consulted before writing this report gave the following:

> ***Trough*** *[trauf,trof] - noun. A long, narrow, open receptacle, usually box like in shape, used to hold water or food for animals.*

However, it was immediately apparent from the troughs on display at the Eastern Study Weekend in Pittsburgh PA, hosted by the Allegheny Chapter of NARGS, that none of the members responsible for the imaginative designs had read this definition. If an animal had dared to show up and eat the contents of these particular troughs there would have been venison, or some such, added to the menu for the evening banquet.

The definition of trough in the NARGS dictionary, judging from the examples on show, would be:

> ***Trough*** *[trauf,trof] - noun. A receptacle of any variety of size and shape containing a secret ingredient in which plants of many different types, colors and heights are grown whilst being artfully arranged amongst rocks.*

That, rather humorous definition, was much nearer the mark for the twenty-two entries competing for the Carl Gehenio Memorial plaque.

This is a new event: Carl, a founding member of the Allegheny Chapter, passed away in late 2011 (he was memorialized in the Spring 2012 issue of the *Quarterly*). He was a superb propagator of rock garden plants. Not only were both his thumbs green but all his fingers as well. Noted for being able to germinate numerous difficult species whose flowers dominated our annual show he developed a strain of *Lewisia cotyledon* that is hardier than any other in the Pittsburgh area.

As Carl's extensive rock garden included many troughs containing alpine gems that defied the ability of others to grow, it is appropriate that his name has been given to this plaque, intended to be awarded annually at future Eastern Study Weekends, with no stipulations, to stimulate interest in trough shows and encourage others to emulate Carl's example.

The judges for the show were Gwen Moore, Rex Murfitt, and Gary Whittenbaugh with Michael Riley and Francisco Correa being awarded

A selection of the troughs entered for the new Carl Gehenio Memorial plaque

This year's winner of the Carl Gehenio Memorial Trough Show was jointly entered by Michael Riley and Francisco Correa of the Manhattan Chapter. Their trough featured two ferns – *Adiantum venustum* and *Dryopteris affinis*; two azaleas – 'Kingsville' and 'Wintergreen'; and *Thymus polytrichus* subsp. *britannicus* draped over the side of the trough.

Matt Mattus, of the New England Chapter came in second. His trough featured two cyclamens – *Cyclamen graecum* and *C. hederifolium*; a *Sternbergia*, *Nerine sarnensis* 'Berlioz' (the tall red focal point), and *Nothoscordum montevidense*.

Jim Adams, of the Allegheny Chapter was third. His trough featured *Pieris japonica*, *Ajuga* 'Metallica Crispa', the satsuki azalea *Rhododendron* 'Kensai', violets, ferns and *Liriope*.

This creative trough was entered by Nicholas Klise of the Mason-Dixon Chapter and emphasized the meandering nature of many rock garden plants through a number of well placed rocks.

This lovely trough was entered by Paul Botting of the Potomac Valley Chapter. It featured sedums including *Sedum* 'Korean Gold', and *Hemerocallis* 'Little Bird'. This was one of a number of the lightweight and lovely styrofoam troughs entered in the Show.

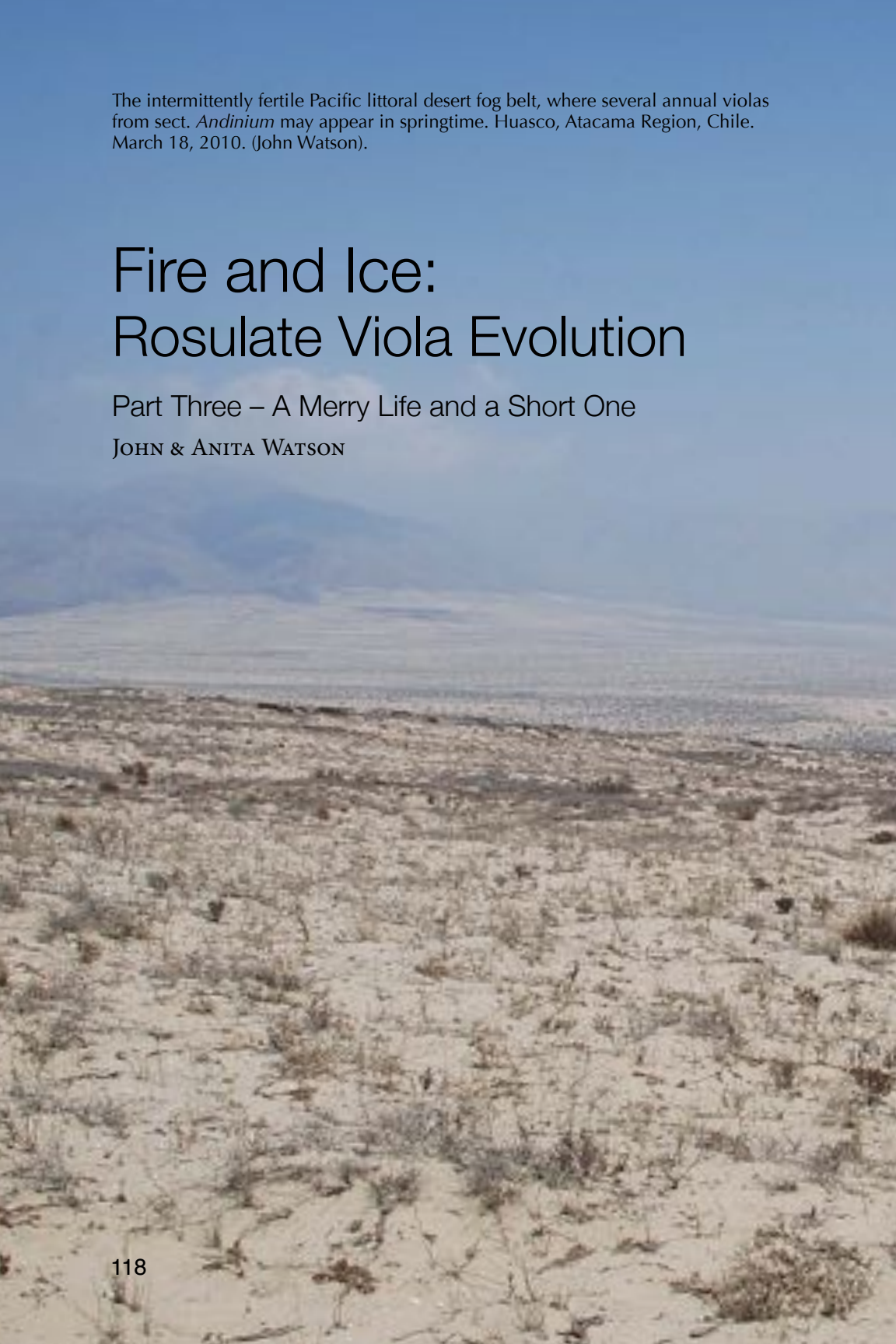
the first prize, Matt Mattus second and Jim Adams third. Gwen was kind enough to provide the reasoning behind the results. All of the attendees appreciated this critique, offering advice about how to better prepare troughs for future shows.

A popularity competition was also held and, not surprisingly, the attendees selected the same three troughs although in a different order: Jim Adam's trough received the most votes, Matt Mattus was second, and Michael Riley and Francisco Correa's trough was third.

To encourage attendees to indulge in this interesting form of rock gardening a trough-making workshop was held that included making of "pop-bottle" troughs with hypertufa, a demonstration of Styrofoam trough-making, and finally a demonstration of how to make a papercrete trough using paper rather than peat in the hypertufa mix. That these types of containers can be readily moved to maximize sun exposure and protect them from the ravages of winter was emphasized to the large number of people who signed up for this workshop.

For details on obtaining a Carl Gehenio Plaque to present at any upcoming NARGS weekend east of the Mississippi please contact Len Lehman at <lclehman1@verizon.net> or 412-233-5902.

The presentation by Gary Whittenbaugh featured the planting of this trough which he then donated to the Allegheny Chapter for the raffle. There is no NARGS Chapter in Iowa; however, Gary is currently working to correct that situation.



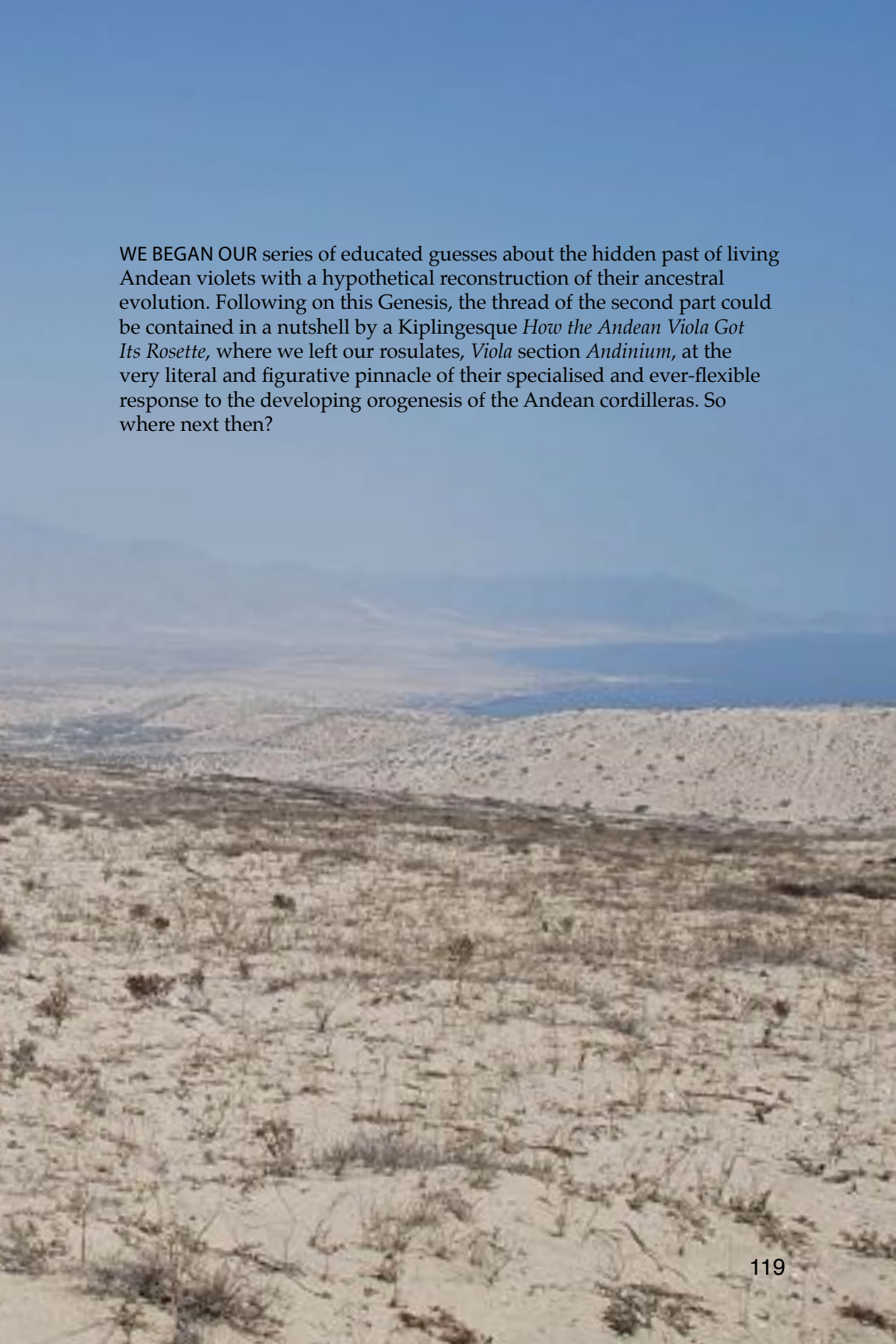
The intermittently fertile Pacific littoral desert fog belt, where several annual violas from sect. *Andinium* may appear in springtime. Huasco, Atacama Region, Chile. March 18, 2010. (John Watson).

Fire and Ice: Rosulate Viola Evolution

Part Three – A Merry Life and a Short One

John & Anita Watson

WE BEGAN OUR series of educated guesses about the hidden past of living Andean violets with a hypothetical reconstruction of their ancestral evolution. Following on this Genesis, the thread of the second part could be contained in a nutshell by a Kiplingesque *How the Andean Viola Got Its Rosette*, where we left our rosulates, *Viola* section *Andinium*, at the very literal and figurative pinnacle of their specialised and ever-flexible response to the developing orogenesis of the Andean cordilleras. So where next then?



It would have been tempting to entitle subsequent developments dramatically by the well-worn adage "Adapt or die". That, however, would be a deceptive over-simplification. Our Andino-Pacific violas (note the new designation) have indeed adapted effectively to radical environmental changes, and are continuing to do so. Despite that, the traditional and long-standing section *Andinium* formats are far from dead and done. On the contrary, many – like the ancient crocodile lineage – have proved resiliently equipped to survive alongside recent models. Now that is what you might label cumulative evolutionary success. In particular, it tells us they have acquired more strings to their bow.

The unmistakable main thrust of more recent evolution among the section *Andinium* violas is displayed by annual species representing something under a third of the section's total strength: 27 species are known to ourselves, 22 of which are found in Chile, 19 of them exclusively so. Although as yet we have no decisive proof that these are in fact relatively recent arrivals, circumstantial evidence is pretty overwhelming. One small jigsaw piece of fundamental "hard" DNA analysis (courtesy of our academic friend and colleague Thomas Marcussen) is that the lineage of present annual *Viola pusilla* Poepp. (confusingly, the illegitimately named *V. pusilla* Hook. & Arn. is *V. subandina*) and that of present perennial *V. congesta* separated around 13 million years ago, in the mid-Miocene. It is vitally important, however, to appreciate that the *V. pusilla* lineage was probably also entirely perennial when they diverged, and may have remained as such for many more millions of years.

So when might the annual viola flora have actually begun, and why? And what explains their overwhelming presence in Chile?

WILDERNESS YEARS, OR LYING DOGGO

Authoritative sources relate the predominant rise of the "here today, gone tomorrow" vegetable lifeform in general to specific circumstances: "Annuals are more diverse and abundant in the mediterranean climate than in any other" – Peter Raven. "Their short life cycle makes them well adapted to a brief season of rainfall" – Peter Dallman.

Mediterraneanisation around the globe is calculated to have initiated at the Tertiary/Quaternary boundary, a mere three million years ago. The particular Chilean version was triggered by a number of major events. Gradual cooling and drying of the Earth's climate, together with the cold Humboldt current flowing northwards from Antarctica along the Chilean coast, were already in place. But the finishing touch was added by ultimate Andean uplift, which blocked and reduced the overland ingress of cool Pacific precipitation from central Chile northwards, eventually creating the Atacama desert, in places now the driest spot on the planet. To begin with though, the climate to the west, below high Andean

Inland annual viola terrain. Kim Blaxland photographing *Viola subandina* on a roadside bank at Lagunillas, Maipo valley, Cordillera de Santiago, Chile. November 23, 2003. (John Watson).

elevations – present-day Chile – simply became drier by degrees, with increasingly irregular and unreliable rainfall. As a result more sensitive perennial herbs gradually fell by the wayside, while at the same time these intensifying new conditions were perfectly suited to annuals. Some of our Andean violas from the foothills and similar lower elevations adopted the classic annual lifestyle: all energy committed to a short-lived but mass display of flowers followed by a superabundance of seeds, ejected to form prolific seed banks. "After they are dispersed, seeds from many species can survive for long periods, often for many decades, until … conditions are favourable for germination" — Peter Dallman. With Chile as the only South American country possessing a mediterranean climate, reasons for the dramatic predominance of annual violas there, and their evolutionary impetus, now become plainly apparent and fit neatly together.

Traditional classification divided the violas of section *Andinium* into perennials and annuals. Unfortunately this makes no sense as far as evolution is concerned although to be fair, the basic premise was to break up this large section into manageable bites, rather after the fashion of an artificial key. As a further messy complication, the lifespan division is not always clear-cut either, which in turn has induced errors. Our observations lead us to recognise at least three major branches of annuals, all of which have clearly arisen independently, and are without doubt more closely related to the perennial lines from which they sprang than to one another. Furthermore, at least two perennial species, *V. volcanica* and *V. montagnei*, are capable of producing short-lived individuals. If not annuals, these latter are certainly optionally monocarpic, so potentially well on the way, although monocarpy as such is not the sole pathway to this change of lifespan. At present our integrated concept of annual andinium viola evolution is admittedly hazy. We have only been able to link one of the branches firmly to a perennial group, so will content ourselves with a broad review here. Out of background interest, Thomas Marcussen informs us the perennating habit is evidently primitive in *Viola*, and annuals have only evolved a handful of times in lineages outside of section *Andinium*.

One feasible clue to the continuing progress of annuals, in particular, is the likelihood of the rosette being a relatively specialised and more ancestral physiognomy, with ever more open, tufted forms as later developments better equipped for the cut and thrust of modern complex plant associations. We explore that possibility most particularly in our sequence of supporting illustrations.

SCATTERSHOTS

Well, that has largely got the stuffy classroom contextual stuff sorted out, so let's get cracking and enjoy a selection of the violas that thrive on their annual lifestyle, each ending its transient existence with a random mortar bombardment of multitudes of typical streamlined, teardrop-shaped *Viola* seeds. Most perish as per the biblical "some fell on stony ground",

but enough manage to survive to found the next generation.

It seems reasonable to suppose the first annuals arose in the mountains below the strictly Andean alpine zone. If so, then we might take somewhat variable *Viola subandina* as their representative. This, one of the three most abundant and widespread of the annuals, is the one most likely to be seen on Andean floral tours to central Chile and Argentina – anywhere between the lower mountain river valleys to around 2000 m. That is, if you notice it. For it is usually but a tiny, elfin thing, often pallid-flowered, and best suited to challenging your close-up photography aptitude (are we trying to say it is not worth growing?). Even then, catch it early in the season when it first flowers, for it has a disconcerting trick of reducing the size of its corollas still further as time goes by until it eventually disappears into its own cleistogamy! (Note: the phenomenon of cleistogamy in the *Andinium* violas has apparently not been investigated, or even recorded elsewhere as yet.) However, on occasions *V. subandina* will pull itself together, bulk up its usually solitary rosettes and put on a creditable show of decent-sized, pretty pinky lilac, sunburst-centred typical violets, as in our illustration. Another half-dozen annuals close to *V. subandina* are recorded from the Santiago and nearby cordilleras, of which few – if any – have been seen and recognised since they were first described well over a century ago.

Viola subandina. Lagunillas, Maipo valley, Cordillera de Santiago, Chile. 10 December 2010. (Anita Flores)

The genus *Viola* has an ancient global relationship with fritillary butterflies of the Nymphalidae subfamily Heliconiinae. Sometimes, at least, this association can be symbiotic. That is to say the butterfly pollinates the violet, and its caterpillars eat some of the leaves. Chile is no exception to this partnership, and although we have only four fritillaries, the mutual involvement is believed to have first evolved in the Southern Hemisphere, with studies showing that it appears to have existed on the ancestral plants which gave rise to the genus *Viola*. One of these fritillary species regularly haunts the sweet violets and random wild pansies in our

untidy garden. Another inhabits the same localities as *V. subandina*, and may sometimes be seen flitter-fluttering around populations of that plant. These butterflies also serve as invaluable and encouraging indicators during our quests. See one, and you know violas are not far away.

Yellow is far from a commonplace flower colour for andinium violas, so particularly welcome when encountered, and this more often among the annuals than the perennials. No more than eight perennials and five annuals are exclusively yellow, while a further three perennials and four annuals may either be yellow or another colour, with all but two predominantly the other colour – purple, violet, white, pink or lavender. The relative scarcity of yellow-flowered species in the section is further pointed up by taking into account that only three annuals are in any way abundant and widespread, while, despite their limited distributions, the two perennials *V. coronifera* and *V. auricolor* are relatively well-known simply because enthusiasts seek them out.

Viola domeykoana is one of this trio of commoner yellow annuals, as a result of which it has been encountered, collected and photographed on numerous occasions by botanists and amateur enthusiasts alike. Often locally abundant, it may be seen in four central regions of Chile and their opposite Argentinian provinces, and is one of a select group of annuals to try their luck unexpectedly and successfully at high Andean elevations, in this case between 3000 and 4100 m. Like *V. subandina* and several others, it can vary in size from a uniflowered, almost microscopic scrap to a relatively imposing and well-garnished starry rosette with a generous circle of golden, white or lavender flowers. Narrow, shiny leaves often have wavy borders and are marked with a smart reptilian pattern of veins on the upper surface, not only an attractive feature in its own right, but useful for allying it with other species.

Viola domeykoana. Cordillera de Mendoza, Argentina. January 14, 2012. (Kees Jan van Zwienen)

While still considering the semi-arid mediterranean Andean zone, it would be a crime for us not to bring to readers' attention what must

Freckle Face - *Viola escarapela*, colour variants. North side of upper Elqui valley, Coquimbo Region, Chile. 27 November 27, 2010. (Anita Flores)

surely stand as a prime candidate for "Miss Annual Rosulate Viola", if not **the** prime candidate: *Viola escarapela —escarapela* is Spanish for rosette, that is a rosette as worn or awarded. In common English plant-speak, its meaning has been expanded to include plant rosettes. In Chile it has become a generic term for rosulate violas in particular. So, when we needed to provide a name for the species, it therefore struck us as very apt. If freckles would eliminate a girl from a beauty competition, their unexpected presence on its petals does nothing but enhance the charismatic qualities of *V. escarapela*. Until 2010 the species, which is probably limited to upper sections of the extensive Elqui mountain valley above La Serena in Chile's mediterranean "Little North", was only known with pale lavender, violet, pinkish, cream, or white flowers, pretty as these were with their uniquely freckled corollas. Even then it stood as one of the most outstanding of the annuals, further embellished by tight, rather fuzzy-centred rosettes of grey-green or dusky fawn crenate leaves with that reptilian vein-decoration and the irresisitible touch of a glistening, bright red pinhead-gland in the sinus of each leaf-lobe. In 2010 a good colleague took us up an infrequently used side track of the valley to ask our opinion of a pink rosulate viola he had found there. It proved to be a new site for *V. escarapela*. But not just one site – one after another appeared as we followed the track up to about 3000 m, sometimes in wonderful

massed displays of many hundreds of plants where snow had lain. But that is not the end of the story. The icing on the cake was still to follow. As we drove higher than our colleague had been before we were astonished to encounter brilliant golden yellow-flowered forms, a development quite unknown to ourselves or anyone else previously. Usually these yellow forms would be growing mixed with the traditional colours, sometimes all bunched up together like a single plant, a Joseph's coat of many colours. An occasional colony consisted entirely of the yellow form. There were no intermediates between the yellows and other colours. Our intention is to recognise this form with a botanical name, a translation of "Inca gold."

Viola escarapela. North side of upper Elqui valley, Coquimbo Region, Chile. October 14, 2010. (John Watson)

Viola escarapela habitat (opposite) with *Cruckshanksia palmae* on display. North side of upper Elqui valley, Coquimbo Region, Chile. November 27, 2010. (John Watson)

Viola minutiflora in open woodland below the Termas de Chillán, Biobío Region, Chile. November 1971. (John Watson)

Typical *Nothofagus* beech woodland of the southern Andes, an occasional habitat of rare annual violas. Cerro Colorado, Neuquén Province, Argentina, December 28, 2007. (Anita Flores)

Two or three of these *Andinium* annuals certainly rank among the world's tiniest flowering plants. In fact, to add a piece of "hot-from-the-press" news here, one such from Peru has just been described (December 2012) as a new species. Its co-author, our colleague and friend Prof. Harvey Ballard of Ohio, has appropriately named it *Viola lilliputana*. The entire plant, root and all, is shown photographed within the circumference of a U.S. one cent (penny) coin, the flower having a maximum size of 2 mm!

To return to our own experiences: stopping in 1971 for an attractive ground orchid while driving through cool southern Chilean nothofagus woodland, we noticed the clearing we found ourselves in had been cut to create a charcoal burning centre. In places it was floored by a top-dressing of fine black tailings left behind when the carbonised piles of wood had been sacked up, and now supporting a thriving flora of small, interesting plants. Peering down closely to examine these, we were astonished to recognise one species dotted about on the funereal surface as a minute, white-flowered rosulate viola, each plant scarcely more than one centimetre across. Fortunately, our attempts to photograph this wee mite turned out reasonably successfully. Only later, as our knowledge of the section increased, did we come to realise we were the only other collectors to have come across *Viola minutiflora* since it was found and named by Philippi in 1892 but please don't ask us to lead you back to the exact spot after all these years! It probably no longer exists anyway. The possible relationship of *V. minutiflora* to other annuals is particularly difficult to call, but we suspect

it may be an offshoot of the *V. subandina* complex adapted for opportunist occupation of woodland borders, glades, clearings and pathsides.

BEHOLD, THE SEA ITSELF

We began our rosulate viola odyssey among the monkey-puzzles, gradually reaching up into the high Andes, and will now finish beside the Pacific coast. What are we doing there, for goodness sake?

"The habitats [occupied] are found in the lower realms of the Central Chilean Province and high [Andean] elevations… The climate of the Central Chilean province is characterised by a pronounced summer drought, while the climate of the high elevation … is characterised by dry summers, winter precipitation in the form of snow, low temperatures and high diurnal insolation. Generally, aridity becomes less of a stress factor with increasing elevation because of the increased precipitation and reduced evapo-transpiration and reduced temperatures. Of special interest is the significance of cloud and fog belts as moisture providers in montane environments and along the northern coastal areas of Chile." Alison Davies wrote that (slightly modified here) in connection with the composites she studies, but it could equally well have described the schizophrenic distribution of these South American annual violets.

Earlier, we discussed the inception of Chile's mediterranean climate, the progressive reduction in rainfall from the Pacific, and ultimately the virtual cessation of rainfall at middle elevations in northern Chile which became the Atacama Desert, in places devoid of all established life. At the highest altitudes, the Altiplano, just enough humidity still remains in the moist air sweeping across westwards from the Atlantic to provide a brief annual season of snow and ferocious mountain storms, known as the Bolivian Winter. Here a few hardy annuals continue to ply their trade. Their main challenge is to survive the extremes of temperature.

But the new climate regime offered another suitable set of conditions for plant occupation, albeit with their own severe challenge. Along the central and northern Chilean Pacific littoral, including the adjacent inland coastal mountains, supersaturated cool air forms dense, dripping fogs for many days or part-days of the year. In addition, in most years occasional local storms sweep in from the sea to soak patches of the same terrain. As the ultimate bonus, at intervals of years, sometimes many, the climatic phenomenon known as El Niño (or the Southern Oscillation) pays a visit, changing the sea temperature to warm and deluging the northern coast with prolonged, unaccustomed rain. The magical result is a flowering desert.

The annual andinium viola survival strategy to confront this situation was to split into two widely separated longitudinal arms, thereby bypassing the uninhabitable sterile midlands. One of these, as noted, took the high road of the Altiplano. The other, which includes the most successful of all the annuals, dropped down from the inland heights and valleys and took the low road, beside the seaside, often establishing within earshot of the thundering Pacific breakers. Hence the title of Andino-Pacific violas.

Pacific desert littoral. With rains extremely infrequent, sea fogs regularly bathe the hills, sustaining a diverse flora, including violas. Near Paposo, Antofagasta Region, Chile. 19 October 2002. (Anita Flores).

Essentially too, these pioneers are of two distinct lineages. One, already resident in the region, simply modified to meet the changing climate. Even so, its three impressively rosetted and scarcely variable species, clearly of a rather ancestral vintage, have been pinned back to a few last-ditch sites. As such they are called relicts. The other lineage, consisting of five species, is a young, vigorous and highly successful immigrant, which has spread rapidly along the coast for 2000 miles and is still in the full flush of adaptive evolution. All but one of its species are yellow-flowered.

Two of the three relict species, very closely related *Viola johnstonii* and *V. huesoensis*, inhabit the most florally rich and biodiverse fog-oasis of the northern so-called Nitrate Coast. Its population centers, the mainly fishing communities of Taltal and Paposo lie south of the regional capital, Antofagasta. When in full spring bloom this 100-odd km strip can resemble a vast botanical garden. An above-average rainfall for the coast, while still extremely restricted, combined with almost daily dripping fogs clothing the mid- and upper slopes of the impressive coastal mountains, account for its fertility. These fogs reduce insolation stress and impede excessive transpiration loss.

For some species, perhaps even these violas, there is probably also a limited intake of direct water absorption through leaves, stems, spines, hairs and other organs. Even so, the variety of vegetation is obliged to adopt inventive strategies to survive unpredictable periods of extreme aridity. For many, above all the cacti, this involves some form of succulence. Others take refuge in underground storage organs, which are not

Viola johnstonii. Cerro Tombes, Paposo, Antofagasta Region, Chile. 22 October 2005. (Anita Flores).

"Eyelashes" - *Viola johnstonii*, the deflexed marginal "drip" hairs for collecting and directing sea-fog condensation are clearly visible. Cerro Tumbes, Paposo, Antofagasta, north Chile. 22 October 2005. (John Watson)

Viola huesoensis. Las Breas, Taltal, Antofagasta Region, Chile. 24 October 2010. (John Watson)

restricted to typical bulbous genera either. A wide variety of perennial herbs retire to massive subterranean tubers when the going gets too hot. Aestivation, as the shedding of leaves and cessation of growth, is seen in many shrubs, which appear deceptively to be as dead as doornails. Another popular trick is to augment the capture of fog droplets in a covering of hair. A specialised variation of this strategem consists of directing accumulating condensation to the roots. Cactus spines perform this duty, and it is an adaptation where our two violas excel.

As our close-up of *Viola johnstonii* shows, the leaf margins have a deflexed fringe of long, glassy hairs with swollen tips, a bit like tear-drenched eye-lashes, and it is these which direct the accumulating water on the leaf surface down to the soil level. Clever stuff! *Viola huesoensis* only differs by its narrow, more pointed leaves, less tightly imbricated rosettes, and differently shaped flowers. This pair prefers the heights backing the coast.

Viola pusilla. A close southern relative of *V. polypoda*, this form of the immensely variable species has a more open rosette. Chacabuco pass, Aconcagua Province, Chile. 16 September 2004,

Viola polypoda. Two forms of this extremely variable species.

Above: from the desert littoral, with well-developed rosettes. Sierra Izcuña, Paposo, Antofagasta Region, Chile. October 20, 2002. (Anita Flores)

Right: A tufted form where the rosette habit is scarcely discernable. Yerba Buena, Valle de Carrizal, Atacama Region, Chile. 12 October 2010. (John Watson)

Of the other lineage, the two superabundant "immigrant" species, *Viola pusilla* and *V. polypoda*, are also visually similar and closely related to one another, so much so that they too might as well be considered together. Their main obvious difference is complementary geographical and climatic distribution. *Viola pusilla* occurs between Concepción in the south and the north of Coquimbo Region, a range of about 750 miles, taking in all of mediterranean Chile. Continuing where *V. pusilla* leaves off, *V. polypoda* populates every Atacama desert fog oasis as far north as the high latitude of Iquique on the Nitrate Coast.

Both species are bewilderingly variable, so much so that they have been saddled with more synonyms and redundant names than any other andinium viola. Their plethora of different forms, shapes, sizes and morphological variations almost defies the pigeonholes of science.

These free spirits are doing their own thing in the name of running evolution: tight rosettes to loosely tufted forms; large, sprawling hippies to neat little dwarves; glabrous or hairy leaves; linear, spathulate or lanceolate leaves; short or long

peduncles; leaf glands or not; and then some. Their consistent features are yellow flowers, an annual life-form, and the shape of the tiny little crest in the throat of the flower that differentiates them from one another. Mainly because favourable climatic conditions further south allow it to do so, *V. pusilla* ventures inland to a far greater extent than *V. polypoda*. In earliest springtime it decorates road banks and dry meadows on the hill pass above our Chilean home, some 40 miles from the coast.

Many desiderata come out of the Elqui valley behind la Serena. Not least, its vineyards yield the grapes that ferment to end up as the famous Chilean pisco, basis for the irresistible sours of the same name. Then there are the Elqui andinium violas, of which *Viola escarapela* has already been portrayed. From at least four others, *V. aurata* comes into the frame as the final annual of our selection, and also ends the sequence from classical rosette, to tufted, open habit. Furthermore, it provides an outstanding example of annual seedbank strategy and the patience the arid Chilean climate imposes, both on its annual plants and the botanists who study them! We were obliged to wait seven dry, barren years before there was

Viola aurata, a species where the rosette has evolved into a tuft. El Romero, Elqui Valley, Coquimbo Region, Chile. 8 December 2008, (John Watson)

enough rainfall in the valley for the species to germinate and flower. We have no hesitation in declaring *V. aurata* to be aesthetically more choice, as well as being a far rarer species than its two close allies, *V. pusilla* and *V. polypoda*. At its best it is delectable, garlanded below the central upthrust of pale foliage by a tight circle of dark-centred, butter-yellow violets.

Apart from its known, very limited occupation of the lower Elqui valley at around 2000 m, it has only been found at one other site further north in the foothills. Among other features, a patina of greyish-white, fine, short stubble over the foliage of most forms helps to distinguish it. This is particularly intense at the centre of the rosette, which is characterised by a unique tendency on maturity to elongate into shortish stems which often branch loosely to form a little tufted, bushy mound. This growth-form leads us to place it at the end of our images illustrating the transformation from tight rosette to looser, open tuft, a suspected recent adaptation, although in fact *V. aurata* is far from alone among the annual species in this respect.

ODD ONES OUT

A number of species or groups have been omitted from our evolutionary survey for a variety of reasons. In particular there is no mention until now of the significant secondary distribution of at least 14 rosulate species in the outlying Andes of northwest Argentina. They are scarcely known to the interested wider world of botany. Nor have we as yet managed to study our own recent collections from there, or got around to seriously collating original descriptions. Even so, it is already clearly apparent they are a very heterogeneous bunch from a variety of origins, forming sets or individuals which are not closely related to one another at all. To add to the fun, all bar one happen to be endemic to these isolated ranges – they are not found elsewhere. Looks like never a dull moment for us in the foreseeable future!

A brief word on how there came to be such a surprising diversity of them tucked apart and well to one side, east of the main Andean backbone. As already noted for the annuals, the very high, arid, desert Andes of the north – the Altiplano – eventually developed too hostile a climate for any but a small handful of the hardiest and most persistent rosulate violas to tough out. These include both annuals and perennials, perhaps no more than five or six species all told. The majority of the northern annuals, though, have adapted to the slightly softer option of the Pacific desert coast. But there was also a third longitutudinal pathway to maintain the link between the temperate and tropical Andean violas.

Warm, humid air flows across the northern lowlands of Argentina from the Atlantic, deluging the countryside with abundant rainfall in season and resulting in lush, tall woodland graced by epiphytic orchids, an abundance of air plants (bromeliads), and other such exotica. As it continues westward, the Atlantic airflow gradually deposits most of its moisture and the rains become progressively more moderate. The

Outlying east Andean ranges in NW Argentina receive relatively humid air from the Atlantic, enabling violas to by-pass the arid Altiplano. Capillitas pass, Catamarca Province, Argentina. January 6, 2007. (Anita Flores)

Viola triflabellata. Note the large golden-brown furry bee visiting and pollinating left-hand flower. Paso Infernillo, Cumbres Calchaquies, Tucumán Province, NW Argentina. January 9, 2007. (Anita Flores)

vegetation reflects this. Lower shrubs, annuals, grassland and cacti begin to play an increasing role in the landscape. Nevertheless, by the time the air current reaches the first high eastern Andean massifs topping 4000-6000 m, and lifts over them, it still has enough humidity to provide plentiful snow and precipitation, which nurtures a rich local Andean alpine flora of gentianellas, nototriches, calceolarias, dwarf lupins, nierembergias, glandularias, and a host of others whose names would probably be unrecognisable to Northern Hemisphere enthusiasts. But among them, significantly, are our 14 rosulate violas. With such a regular supply of ground water, the perennial growth form is also once again favoured, leaving a mere three annuals among the count. As an actual example of this ecological development for our speciality, we present *Viola triflabellata*, the commonest, most widespread and best known of the 14. It is one of a trio of three closely related species confined to these mountains. As can be seen, it is small but pretty, typical of its kind, but not exceptional. The devil is in the botanical detail rather than the exotic aesthetics.

As well as these northwest Argentinians, we have been obliged to ignore almost completely the "baker's dozen" of varied and extremely

Although there is no photograph of *Viola kermesina* a sense of its habitat can be gleaned from this photograph of the olivaceous thornbill. The viola's presumed pollinator, it is resting momentarily on the turf at 4800 m with scattered crimson *Gentianella* flowers among which it feeds. Pampa Curiocha near Marcopomacocha, Peru (Richard Gibbons)

As well as these north-west Argentinians, we have been obliged to ignore almost completely the "baker's dozen" of varied and extremely interesting rosulate violas from Peru, Bolivia and Ecuador. In part this is due to the obscurity of their relationships with their temperate sisters, but perhaps even more to our own lack of knowledge of them in the field. During our paltry three all-too-short visits to those regions we only managed to encounter two species.

But to set mouths watering and feet itching, the most outstanding rosulate yet to be seen and photographed by us all is Peruvian *Viola kermesina*. It has classic, tightly imbricate and rather succulent rosettes, also somewhat hairy. But what elevates it into the realms of legend are its scarlet, yes scarlet, flowers, otherwise typical violet-like in shape. It lives behind Lima at 4500 m and above, and is pollinated by tiny, lazy, high-Andean hummingbirds. Lazy? Well yes. How else would you describe a hummingbird that walks over the ground to feed rather than hovering?* And if anyone ever has the good fortune to visit Peru and find this viola of violas, please don't forget to put us in the picture.**

* Richard Gibbon's photographs, and notes can be found at <perubog.blogspot.co.uk/2009/08/olivaceous-thornbill-chalcostigma.html> and <neotropical.birds.cornell.edu/portal/species/gallery?p_p_spp=273176>. Closer views of the bird and flowers can be found at <www.birdforum.net/opus/Image:Olivaceous_Thornbill.jpg> and at <www.feltornitologene.no/galleri/bilde.htm?iid=100>. In *Birds of the High Andes*, Fjeldsa & Krabbe, specifically note of *Chalcostigma olivaceum* "Habits: Largely insectivorous. Often feeds walking over short grass, cushion plants, or thick mats of hair covering cushion cacti, and seen feeding from prostrate red flowers on boggy slopes." But recent and repeated field observations, during research by Richard Gibbons, give a more energetic picture of the bird flitting from flower to flower. A piece of film by Martin Kennewell, in the same vein can be viewed at <http://ibc.lynxeds.com/video/olivaceous-thornbill-chalcostigma-olivaceum/male-characteristically-feeding-hopping-between-gr>. (Whether it is catching insects in flight, or is feeding from the flowers, or insects on the ground when it lands, or all of these, is a matter of interpretation.) *Ed.*

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One obvious attributable evolutionary trend has been overlooked so far in this account. In central and southern Chile a small group of four perennials has begun the process of mimicking traditional Northern Hemisphere violets.

This convergent adaptation is well displayed in *Viola glacialis*, where the rosettes can be seen to have broken down into an amorphous clump of loosely-set, spreading to upright entire leaves on clearly visible, distinct petioles. The likeness is most evident though in the large, showy pink, violet or purple flowers, which stand up well clear of the foliage in a manner quite unlike most perennials of section *Andinium*. With little doubt, this development originates from the lineage containing *V. rosulata* and *V. congesta*. It possibly represents a recent competitive adaptation, allowing the species to hold its own when in close company with other vigorous small herbs. An interesting example of parallel evolution is presented by one of the four, *Viola acanthifolia*, which has strongly lobed leaves divided up to halfway. This highly unusual development for rosulate violas is only otherwise found in a small alliance of Peruvian species, including pint-sized *V. lilliputana* already mentioned.

Viola glacialis. One of a small perennial alliance evolving towards the form of traditional violets. Las Placetas, Maule Region, Chile. December 24, 2009. (Michail Belov)

Impressive wild scenery depicting a selection of the wide variety of habitats and ecological niches to have developed in Andean Patagonia. Sierra de Catan Lil, Neuquén Province, Argentina. November 23, 2009. (John Watson)

Viola sacculus, an "odd man out" in the evolution of section *Andinium*. Cerro Catedral, Río Negro Province, Argentina. 30 December 2002. (Anita Flores)

Those left out also include several "mavericks" which do not correspond with any of the trends reviewed so far. These include familiar *Viola sacculus* and another, singular *Viola escondidaensis*, that is one of the least rosulate of all rosulate violas. It stands on its own with no obvious living close allies, so it is difficult to divine where it fits into the overall section *Andinium* pattern. On the other hand its functional adaptation is pretty obvious. Its major variance from any other described species in the section is the rhizomatous root system. As a result of this it forms spreading patches of erect stems up to about 12 cm tall clad in narrow leaves and capped by a tight circle of fairly sizeable, stemless, elegant violets with an unusually narrow lowermost petal. The flower varies from white to heavily veined and stained dark bluish violet. So what does the rhizomatous root tell us? When considered in conjunction with the predominant habitat of loose, volcanic sand populated by bunchgrass-dominated communities, it can be seen as a survival strategy against grazing by wild and domestic mammals. By insinuating itself into the dense fibres of bunchgrass roots, and growing up through the tough core of wiry, sharp-tipped leaves, its tender shoots gain considerable

Wiry steppe bunchgrass on volcanic pumice sand, a very specialised niche exploited to its advantage by the untypical Andean violet, *Viola escondidaensis*. Cerro Atravesada, Neuquén Province, Argentina. (John Watson)

Viola escondidaensis. Parque Provincial Tromén, Chos Malal, Neuquén Province, Argentina. 28 November 2003. (John Watson)

protection. Even if they are bitten off, the underground portion is capable of regenerating new growths. As a possible extra benefit, the area of northern Patagonian steppe it inhabits is very prone to be blanketed in volcanic fallout from time to time, so this root system would clearly suffer little if any ill-effects from being buried, by comparison with a typical rosette. It is probably a recent evolutionary adaptation – which ends our survey on a piece of sheer guesswork!

TYING LOOSE ENDS

Most of that string of questions about rosulate violas in general which was flung out in the first sentence of Part One await an answer …

"Why are their plants so different from other violets, yet their flowers the same?" The short answer is they have conservative and usually recognisable flowers in conjunction with inventive, dissimilar foliage and growth-form forms, which Thomas points out as a development allowed by the considerable biological time-span of the genus *Viola*. In fact conservative flowers are a feature of violas worldwide, with the principle discernable difference being between pansies and violets; and meeting points exist even there. Although the foliage and habit of many

violets and pansies is also recognisable, when they are not the flower will almost invariably give the game away. Presumably continuous long-term effective and stable interaction with all their variety of pollinators accounts for the homogeneous flower shape, while adaptation to a wide and volatile range of climatic and habitat changes obliged dramatic adaptations of growth form and foliage. We might add that the close likeness of capsules and seeds of all violas amounts to an even more common fingerprint than the flowers.

"Why do they occur in South America and nowhere else?" The capacity of violas to form rosettes is not in fact confined to this Andino-Pacific section. Its type of rosette is unique however, in that the shoots of all *Andinium* species contain a more or less increased number of leaf rows, thus enabling the formation of dense rosettes unknown in any other violas. We may speculate that maybe none of the rest have encountered conditions where tight rosettes would have conferred an overwhelming advantage.

The reason for the andiniums being confined exclusively to the western sector of South America southwards from the equator deep down into southern Patagonia is another consideration. The southern limit is perhaps easier to explain. Rosulate violas evolved when Antarctica was already long established and iced over, so they missed the boat by ten million years or more for the journey to Australasia via dispersal and tectonic drift. As they are more specialised to certain conditions, and not able to spread around on open ground at will, they are also highly vulnerable to the regular ebb and flow of blanketing ice age glaciations, which have their maximum northerly spread exactly where the rosulates reach their southern cut-off limit. The reason section *Andinium* has not spread northwards beyond the equator is probably due to its essentially Andean nature. An examination of the high alpine South American flora as a whole shows that none of the major endemic genera or groups have managed to migrate beyond the continent – *Nototriche*, *Calceolaria*, *Werneria*, *Azorella*, *Chaetanthera*, and section *Acaules* of *Calandrinia*. That *Astragalus*, *Gentianella*, *Gaultheria*, *Senecio*, *Geranium,* and others, are well represented both in the Andes and elsewhere is due to their basic origin pre-dating their Andean development. In fact the Andean flora reduces significantly in diversity from Ecuador northwards. It would seem the northern high cordilleras are just too few and far between to allow the continuous dispersal of an alpine flora.

And finally: "Why are they so difficult to grow?" Ask us another (unless, that is, you want to put up with another long, speculative technical discourse), and kindly pass a handkerchief to wipe away our tears of frustration!

"Little flowers". Pacific fog belt desert in bloom. Habitat of *Viola polypoda*. Anita (left) & botanist friend, surrounded by, among others, *Copiapoa dealbata*, *Argylia radiata*, and *Cistanthe longiscapa,* during Latin American Botanical Congress. Carrizal Bajo, Atacama Region, Chile. 9 Oct. 2010. (John Watson)

My love affair with Meconopsis

Not everyone who loves plants gets to take them on round-trips every year - Margaret Bowditch and her blue poppies do just that!

MANY YEARS AGO I glimpsed a blooming *Meconopsis* in a coastal Maine nursery. I was instantly smitten and immediately bought several to grow in my nearby garden. Though their name tags were lost early on, they grew well in an east-facing bed by our farmhouse. The soil is acidic (pH 6) and we are in U.S.D.A. hardiness zone 5. Most winters offer snow cover.

The nursery where I bought them only carried them that one season so, when I was ready for more, I ordered some *Meconopsis grandis* plants from the west coast. They all prospered and I suspect that they produced a few crosses as there were more each year. I've tried a few other kinds including some that are monocarpic, but find that *M. grandis* and its near kin do best in my garden.

I was advised by a fellow Maine *Meconopsis* enthusiast, Mary Homans, that they did better if well fertilized. So I vary feeding with Osmocote 14-14-14 and Miracid. Since I had alerted Mary to the possibility of growing *Meconopsis* in Maine, I must admit I was not entirely delighted when hers outshone mine.

After a few years of success in my Maine garden, I thought I had enough plants to take some to our winter home in Philadelphia and to try to force them for the Philadelphia Flower Show. It's held the first week in March so it would be a challenge to provide sufficient cool temperatures and then bring them into flower in March. After spending about 3 months

in my cold frame they were brought into our 60 degree basement in mid-January and put under fluorescent lights. I increased the hours until they were getting constant light. The first year I got two in bloom for the show. I labeled them "*Meconopsis* species" as I couldn't be sure of the identification. That initial success gave me a false sense of how easy it is to bring them into bloom. After that year, I had only a few successes in fifteen years. But each time I had a blooming *Meconopsis* it created a small sensation at the show. Many Philadelphians had only read about them and were thrilled to see the real plant. Newspapers picked up the "*Meconopsis*" story and friends across the U.S. sent me clippings.

I can now direct Maine gardeners who want to grow *Meconopsis* to nearby nurseries that carry the plants (Surry Gardens and Evermay Nursery). Over the years I've tried growing them from seed. My own plants are not available for seed harvesting as that house has other occupants during July and August. So I order from several seed exchanges. I receive those seeds in late winter and the seeds get a late start. My best bet is ordering *M. grandis* from Thompson and Morgan (T & M) each November and sowing them immediately. I sow them in a mix of Turface, peat-based potting soil, and, if the mix looks heavy, I add grit. I follow T & M's instructions and put the seed pans in a 55–60F spot. Germination follows in three to four weeks. I grow them on in a cool southeastern exposure here in Philadelphia until spring. Those seedlings are big enough to withstand the less than ideal conditions that often occur when I take them north in early May to the cooler climate they need to survive. In our foggy Maine seaside spot, the older seedlings are able to survive the mildew that often kills off smaller seedlings from late winter sowings. My usual mildew remedies may finish off the mildew but they kill the seedlings so I avoid using them.

Is all this effort worthwhile? Absolutely. The success of some of the seed-growing efforts and the flowers of full-grown plants make it so. There are some years when plants bloom for only a few weeks if the weather turns hot in June. Other years they linger for at least a month. But when *Meconopsis* bloom they are show-stoppers and worth every moment of trouble.

I've seen *Meconopsis* offered in plant catalogs and usually they are listed as hardy in U.S.D.A. zones 5 – 8. That information may mislead buyers as *Meconopsis* only survive where summer temperatures are cool. In most of the U.S. that means northern New England or the Pacific Northwest. If you live in those areas I urge you to try them.

Philadelphians, and those able to visit Longwood Gardens in nearby Kennett Square, Pennyslvania, in March can see *Meconopsis*. They order *Meconopsis* 'Lingholm' plants from The Blue Poppy wholesale nursery in Alaska. They arrive in October and are grown on through the winter to go on display in the conservatories in March. *Meconopsis* flowers are the most photographed blooms at Longwood—no small distinction.

WINNER Class 4: Natural scene with plants
Kees Jan van Zwienen - Laguna Escondida with *Calandrinia caespitosa* in the foreground, Neuquen, Argentina

Photo Contest

THE 2012 PHOTO CONTEST had some great entries, so the judging panel had some wonderful photographs to choose between. Having looked at all the entries, spent time selecting a short list of 6 to 10 in each category, and had a break for a meal, they went back to their short lists and chose the winners. Only then did they discover who had taken each picture.

The 6 class winners are all printed here but they are just the tip of what, in some categories, is a very substantial iceberg. It's not possible to show all those that placed in each category, or to show the winners at the size they deserve, but it is possible to include a substantial selection in the Digital Quarterly so that members can see just how good so many of the pictures are.

Congratulations to the winners, but also thanks to all those who entered the contest and helped make it such a spectacular one.

EXTENSIVE GALLERY of
2012 PHOTO CONTEST ENTRIES
in the DIGITAL QUARTERLY.

Class winners, runners up,
and a selection of commended entries.

See it all online at WWW.NARGS.ORG

FULL DETAILS OF
THE 2013 CONTEST
ARE ALSO IN
THE QUARTERLY
ONLINE.

Photo Contest 2013

The deadline for entries is
November 1st, 2013

PUT THE DATE ON YOUR CALENDAR **NOW**

ENTRIES SHOULD BE SENT TO :

Bobby Ward, NARGS Executive Secretary,
PO Box 18604, Raleigh, NC 27619-8604.

WINNER Class 3 - Portrait of plant in the wild
Kees Jan van Zwienen - *Caiophora coronata*, Reserva Natural Laguna del Diamante, Mendoza, Argentina

WINNER Class 1: Rock Garden Scene
David Sellars - Rock garden steps

WINNER Class 6: North American native plant
Merrill Jensen - *Anemone multiceps*, Kigluaik Mountains, Alaska

WINNER Class 2: Portrait of a Plant in Cultivation
Erica Schumacher - *Crocus chrysanthus*

WINNER Class 5: Close-up
Todd Boland - *Lewisia tweedyi*

Photo Contest 2013

If you enjoy photographing plants, share your enthusiasm with others—and perhaps win a prize.

The NARGS Annual Photo Contest gives you an opportunity to see your photographs in the *Quarterly* – as well as getting a free year's membership for someone of your choice.

CLASSES

Class 1: ROCK GARDEN SCENE
Image of a rock garden (general view or isolated vignette). It is the photograph that is being judged rather than the garden itself and it does NOT have to be your own garden. Please identify the owners of the gardens. Hint: Frame your image carefully to exclude unattractive and unintended objects ... or move them.

Class 2: PORTRAIT OF A PLANT IN CULTIVATION
Image focuses on a single plant, group of flowers, or small group of the same plant in the garden, or in a container (pot, trough or other container).

Class 3: PORTRAIT OF A PLANT IN THE WILD
Image focuses on a **single plant** in its native habitat. Ideally, the entire plant should be visible, not just a flower, which is more appropriate to class 5.

Class 4: NATURAL SCENE WITH PLANTS
Image includes both wild plants and their surrounding habitat and scenery. This need not be high mountain scenery. Please identify the site. Hint: This is not the same as class 3, and should not foreground a single plant specimen; the emphasis should be on the general scene. Depth of field is a strong consideration.

Class 5: CLOSE-UP
Close-up image (macro or otherwise) of **single flowers** or other plant parts.

Class 6: NORTH AMERICAN NATIVE PLANT
Image may be of any North American native plant . This may be in the wild or in cultivation.

In addition to the fame, and the gratitude of the editor, you can win a year's NARGS membership as a gift to a new member of your choice. Entries should be submitted as digital images on CD. Photographs will be archived for future publication. All published photos are credited, and copyright remains with the photographer. Entering the contest grants NARGS permission for one-time use of all images submitted.

INSTRUCTIONS for ENTRIES

Digital images may be submitted in JPG or TIF format. Other formats may cause problems. Please examine the file extension on your image files to make sure it says "jpg" or "tif." If you are not sure how to save images in these formats, refer to the instructions that came with your camera. Submit all your images on one CD, with each image file renamed with the subject and your initials (e.g., *Phlox hoodii JM.jpg*). If you are entering several classes, it is very helpful to make a separate folder for each class.

Include a text document listing your entries by class, with plant names fully spelled out and any other information you feel should appear in a caption when the photo is published. Please submit this list on paper and also put it on the CD as a DOC file.

Slides and prints should be accompanied by a list like that described above. If you need them back quite soon, please let us know in your cover letter. Be sure that each slide or print is clearly labeled with your name and the subject.

You may enter a maximum of ten images in each class.

The deadline for entries is November 1st, 2013

PUT THE DATE ON YOUR CALENDAR **NOW**

ENTRIES SHOULD BE SENT TO :

Bobby Ward, NARGS Executive Secretary,
PO Box 18604, Raleigh, NC 27619-8604.

Judging criteria are technical quality, aesthetic appeal, adherence to parameters of the class entered, and suitability for publication. Different judges are recruited each year by the editor and remain anonymous.

Photo Contest 2012

Result

Class 1 - Rock Garden Scene

1st – DAVID SELLARS – Sellars rock garden steps

2nd – TODD BOLAND – Crevice garden at Memorial University of Newfoundland Botanical Garden

3rd – DAVID SELLARS – Sellars rock garden

Class 2 - Portrait of a Plant in Cultivation

1st – ERICA SCHUMACHER – Crocus chrysanthus

2nd – MERRILL JENSEN – Primula elatior

3rd place – TODD BOLAND – Papaver burseriana

Class 3 - Portrait of a Plant in the Wild

1st – KEES JAN VAN ZWIENEN – Caiophora coronata, Reserva Natural Laguna del Diamante, Mendoza, Argentina

2nd – KEES JAN VAN ZWIENEN – Chaetanthera spathulifolia La Cumbre pass (near the Chilean border), Mendoza, Argentina

3rd place – TODD BOLAND – Rhodiola rosea, Great Northern Peninsula, Newfoundland

Class 4 - Natural Scene with Plants

1st – KEES JAN VAN ZWIENEN – Laguna Escondida, Neuquen, Argentina with Calandrinia caespitosa

2nd – KEES JAN VAN ZWIENEN – Senecio crithmoides, Parque Provincial Domuyo, Neuquen, Argentina

3rd equal – DAVID SELLARS – Erythronium montanum, Mount Rainier NP, Washington

3rd equal – DAVID SELLARS – Castilleja parviflora, Mount Rainier NP, Washington

Class 5 - Close up

1st – TODD BOLAND – Lewisia tweedyi

2nd – DAVID SELLARS – Meconopsis napaulensis

3rd – TODD BOLAND – Geum 'Leonard's Variety'

Class 6 - North American Native Plant

1st – MERRILL JENSEN – Anemone multiceps

2nd – KEES JAN VAN ZWIENEN – Calachortus subalpinus, Mount Hood, Oregon

3rd equal – KEES JAN VAN ZWIENEN – Phlox diffusa, Mount Hood, Oregon

3rd equal – DAVID SELLARS – Castilleja occidentalis, San Juan Mountains, Colorado

3rd equal – KEES JAN VAN ZWIENEN – Ipomopsis aggregata, Crater Lake NP, Oregon

plus commended entries from Matt Mattus, Lola Lloyd Horwitz, and Abbie Zabar

Class 1

Rock Garden Scene

Winner – DAVID SELLARS

Sellars rock garden steps

Class 1 - Rock Garden Scene

2nd place – TODD BOLAND

Crevice garden at Memorial University of Newfoundland Botanical Garden

Class 1 - Rock Garden Scene

3rd place – DAVID SELLARS

Sellars rock garden

Class 2 - Portrait of a Plant in Cultivation

Winner – ERICA SCHUMACHER – Crocus chrysanthus

CLASS 2 - Portrait of a Plant in Cultivation

3rd place – TODD BOLAND – *Papaver burseriana*

2nd place – MERRILL JENSEN – Primula elatior

Class 3 - Portrait of a Plant in the Wild

Winner – KEES JAN VAN ZWIENEN – *Calophora coronata*, Reserva Natural Laguna del Diamante, Mendoza, Argentina

Class 3 - Portrait of a Plant in the Wild

3rd place – TODD BOLAND –
Rhodiola rosea,
Great Northern Peninsula, Newfoundland

Class 3 - Portrait of a Plant in the Wild

2nd place – KEES JAN VAN ZWIENEN

Chaetanthera spathulifolia, La Cumbre pass (near the Chilean border), Mendoza, Argentina)

Class 4 - Natural Scene with Plants

Winner– KEES JAN VAN ZWIENEN – Laguna Escondida, Neuquen, Argentina with Calandrinia caespitosa

Class 4 - Natural Scene with Plants

2nd place (right) – KEES JAN VAN ZWIENEN
Senecio crithmoides, Parque Provincial Domuyo, Neuquen, Argentina

3rd equal (bottom right) – DAVID SELLARS
Erythronium montanum, Mount Rainier NP, Washington

3rd equal (below) – DAVID SELLARS
Castilleja parviflora, Mount Rainier NP, Washington

Class 5 - Close up

Winner – TODD BOLAND

Lewisia tweedyi

Class 5 - Close up

3rd – TODD BOLAND

Geum 'Leonard's Variety'

Class 5 - Close up

2nd – DAVID SELLARS – Meconopsis napaulensis

Class 6 - North American Native Plant

Winner – MERRILL JENSEN

Anemone multiceps, Kigluaik Mountains, Alaska

Class 6 - North American Native Plant

2nd place – KEES JAN VAN ZWIENEN

Calachortus subalpinus, Mount Hood, Oregon

Class 6 - North American Native Plant

3rd equal

KEES JAN VAN ZWIENEN – Phlox diffusa, Mount Hood, Oregon (above)

DAVID SELLARS, Castilleja occidentalis, San Juan Mountains, Colorado (top right)

KEES JAN VAN ZWIENEN – Ipomopsis aggregata, Crater Lake NP, Oregon (bottom right)

Class 4 - Natural Scene with Plants

Commended

MATT MATTUS

Primula auricula, Eigergletscher, near Klein Scheidegg in the Jungfrau Region, Switzerland

Class 4 - Natural Scene with Plants

Commended

MERRILL JENSEN

Oxytropis nigrescens, Kigluaik Mountains, Alaska (opposite)

Class 6 - North American Native Plant
Commended – TODD BOLAND
Penstemon lyallii, Glacier NP, Montana (above)

Class 4 - Natural Scene with Plants
Commended – ABBIE ZABAR
Sempervivum varieties in tufa over New York City courtyard (opposite above)

Class 5 - Close up
Commended – LOLA LLYD HORWITZ
Codonopsis lanceolata (opposite below)

Class 6 - North American Native Plant

Commended

Above: TODD BOLAND – Clematis tenuiloba, Big Horns Mountains, Wyoming

Opposite: LOLA LLOYD HORWITZ – Clematis viorna

Photo Contest 2013

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American Penstemon Society members searching dunes for blowout beardtongue (*Penstemon haydenii*)

A summer of chasing wildflowers with friends

Ginny Maffitt

Part 1
Penstemons in Laramie

I FREELY ADMIT that I'm now hooked on attending plant society conferences! I mean the sort that take you into wild places where flowers grow that you'd never find on your own. I love the kind of trip where you meet good friends, usually seen once a year, but who are often in touch by email. These trips feature banquets ready for your delectation and, afterwards, speakers who are experts in their fields with subjects dear to my heart. What's not to love about plant society expeditions?

NARGS 2012 Annual Meeting, Everett, Washington

When I can't get expeditions I still go to plant conferences. I kicked off 2012 with a three-hour drive to Everett, Washington, with a good friend whose activities I don't often get to catch up on, for the NARGS Annual Meeting in early March. A garden highlight for me was the new rock garden in the 3½ acre Everett Evergreen Arboretum. Using a NARGS grant, a 30 x 15 foot garden was created on the sloping lawn. With sand beds at least 3 feet deep and artistic boulder placement, xeric plants were thriving, and some were blooming that often need winter cover to survive the rain. With a minimum of rainy times and a fair amount of early spring flowers, we had great fun. Of course, I spent way too much on really cool alpine plants in the bountiful sales room! Thank you to all the hard-working members of the NARGS who helped at Everett!

The American Penstemon Society in Laramie, Wyoming

In June, the American Penstemon Society held its only meeting of 2012—that's right, they have one bang-up weekend which takes about a year to plan. Call it wonderful. They publish a yearly printed "Bulletin," quarterly online newsletters, and a professional website complete with photo gallery at <www.apsdev.org>, plus manage a wonderful seed exchange. With or without my husband, I've been attending the annual meetings since 2002. He generally comes along after the organizers have told him about the golfing opportunities! Each destination/meeting has been in a different area and offers a different set of penstemon species. The area will also offer a huge panoply of other wildflowers, in wild places and the meetings are attended by members coming from across the country and sometimes Europe.

Headquartering in Laramie, Wyoming (the Buckaroo state) this year, we had evening meetings and tours at the University of Wyoming campus in the brand-new Berry Biodiversity Conservation Center (BBCC). On each of the three days, we had tours in various directions to the Snowy, Medicine Bow, and Laramie mountains. The third day took us to the site of the rarest plant in Wyoming, *Penstemon haydenii*, the blowout beardtongue, known for growing only on sand dunes.

Hosting our meetings at the newly built BBCC, Dorothy Tuthill, the Associate Director, (and a PhD botanist who also is conducting genetic research on the mysterious Oregon penstemon) was able to provide meeting rooms, a reception hall and banquet room on campus. For much

of the previous year she collaborated with Hugh McMillan and Randy Tatroe, both of Denver, planning for speakers, tours, and various venues. Their planning was meticulous and everything ran like clockwork. An invitation was extended to the Wyoming Native Plant Society to attend and help plan hikes and tours. This brought in a marvelous group of people, many of them professionals in the natural sciences. A total of about 65 people attended the conference.

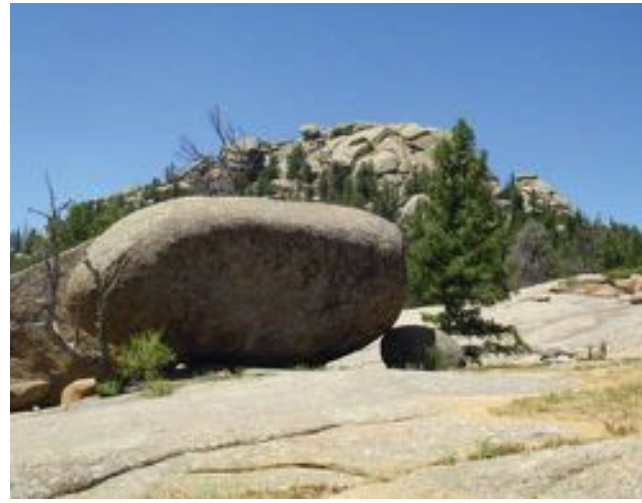
On Friday, tours were offered into the huge Rocky Mountain Herbarium several buildings away from BBCC. Curator Dr. Ron Hartman demonstrated the new online search program. This links collected species to their collection sites, with much other information available. He commented that if they caught up with all the specimens ready to be accessioned, there would be over a million species in the herbarium, making it the fourth largest in the U.S. The herbarium manager, Ernie Nelson, gave tours exploring the mysteries of the storage cabinets. He had a series of vouchers laid out to feature the oldest or rarest specimens, and the local penstemon species. Both men led tours around the Vedauwoo Rocks area over the weekend.

I've noted over the years that the Penstemon Society also attracts botanists and biologists with varied careers such as curators from botanic gardens, university professors, and a gamut of folks who work for the alphabet of federal agencies, plus botany students. Hiking, eating and driving together allows lots of interaction and gives the "just plain gardeners" among us a chance to ask any and all questions about the plants we're viewing. Often though, we're the ones who can advise how to actually grow some of these plants in a garden!

The only glitch in all the planning was the worst winter drought since the Dustbowl of the 1930s. In 2012, up until June, Laramie had received only one inch of precipitation. The meadows below 7000 feet crunched underfoot. Oddly, winter frost-heaves on bare ground were still uplifted without spring rains to smooth them. The flowers, except those being watered in the institute's native display gardens, were really only seen at elevations above 8000 feet which abound in Wyoming.

On that first evening, the speaker, Professor Emeritus Dennis Knight, explained the unique ecology and topography of the Laramie Basin, which is able to hold water, forming a natural oasis in the dry southeastern corner of Wyoming. Laramie is in a double rain shadow from the Snowy and Medicine Bow Mountains circling to the southwest. These tend to block jet stream rains while mesas nearby can block summer monsoonal rains. Luckily snow is held in the basin's deep ravines, allowing big sage to grow in the deep soils. New findings indicate that its deep roots help translocate water up to nourish more shallow rooted species helping the basin to grow a greater variety. I remember when the goal of Great Basin landowners was to eradicate "that pesky sagebrush."

On Saturday, our group spent the morning hiking around the Vedauwoo Rocks about 15 miles east of Laramie. The road over the Laramie Pass climbs from the basin at 7700 - 8500 feet getting into "breathless" country for my husband and I who live at 380 feet. At the pass is a rest stop that is a must-see for travelers, with not only restrooms, but a marvelous, huge bronze bust of Abe Lincoln on a brick plinth perched above the highway. Lovely meadows circle the area with several species of *Oenothera* (evening primrose), plus various species of daisies and penstemons. There are loop trails that take off just behind the parking that we walked the day before. *Penstemon strictus*, *P. procerus* and *P. virens* were all seen there, plus *Corydalis aurea*, *Eriogonum umbellatum*, *Oenothera caespitosa*, *Potentilla hippiana*, *Frasera speciosa*, and many *Oxytropis* and *Astragalus* species. It summited with a view of surrounding high country before looping back. Many local folks were walking dogs, jogging or strolling and gave us all sorts of advice about the best trails.



"Pillow" rock in the Vedauwoos

The hike around the Vedauwoo Rocks is only 2.5 miles long, but took several hours as not only penstemons, but native shrubs and flowers were identified and discussed. With the inclusion of members of the native plant society, it seemed that every third hiker was a knowledgeable botanist. I hiked awhile with Mike Kintgen, curator of the alpine garden at Denver Botanic Gardens. Stumbling on a little wetland, Ron Hartman and our guest speaker from Kansas State University, Craig Freeman, came downhill to snoop with me. In bloom were *Dodecatheon pulchellum* (shooting star) and *Pedicularis groenlandicum* (elephant nose) among the ferns. I pointed out a fist-sized frog with black stripes that turned out to be a leopard frog on the WY threatened list.

The Vedauwoo Rocks resemble flattened pillows that giants stacked haphazardly long ago; so precariously balanced that a tiny earthquake would bring them tumbling down. Little streams form bogs and marshes in surprising places and we waded in one little creek. We found both pink and lavender *Penstemon secundiflorus* with flowers on one side of the stem (secund). *Penstemon virens*, deep purple, under 8 inches, popped

up here and there and one was blooming while only 3 inches tall. *Heuchera bracteata* peeked out from a pillowy rock overhang, and in the bog near the parking lot were pink and white *Pyrola asarifolia* (liverleaf wintergreen), *Corallorhiza maculata* (summer orchid), *Platanthera dilatata*, (white bog orchid), and oddly, the death camas, *Zigadenus venustus*, that I've only seen in very dry country in eastern Oregon and Washington.

Leaving the Vedauwoo area, we stopped at a railroad crossing with a meandering bog just downhill. In this unlikely spot, *Penstemon eriantherus* var. *eriantherus*, the fuzzy-faced pink beardtongue, *P. unilateralis* (syn: *P. virgatus* subsp. *asa-grayii*) and *P. glaber* var. *glaber*, all within 30 feet of each other growing on a slope of red cinder brought in to build up the rail-bed. *Penstemon grandiflorus* is just one of a host of roadside plants we stopped for. Driving out into high desert sage, the cars began stopping as the 4-inch-tall *P. laricifolius* var. *exilifolius* was spotted. This tiny plant is white, while its other variety, var. *laricifolius*, also found in central Wyoming, is pink to lavender. We headed back to Laramie for well-deserved showers before the evening banquet.

Sunday's schedule pointed us to a day in the Snowy Mountains, about 30 miles west of Laramie. We drove up to 10,557 feet elevation to the Brooklyn Lake Basin. A tiny log building, St Alban's Chapel, was built long ago in the first open meadow. Looking online

Penstemon unilateralis

Penstemon glaber var. *glaber*

St Alban's Chapel, Snowy Mountains

later, I found bridal parties posing there in formal dress. Surprisingly, the surrounding meadows look untrampled and hosted a huge diversity of tiny alpine species. Mats of white *Phlox pulvinata* led one on to large-flowered, lavender *Erigeron simplex*. The paintbrush, *Castilleja sulfurea* was, surprising to me, white! *Polemonium viscosissimum* was the deepest possible cobalt blue, while changeable *Penstemon whippleanus* was seen in sky-blue. It can vary from deepest black-purple, hues of blue, yellows to a dirty white and grows at high elevations through the Rocky Mountains. *Mertensia ciliata*, mountain bluebells, dangled over tiny streamlets, while golden *Erythronium grandiflorum* edged itself along the mountain fir stands. Walt Fertig, a consulting botanist from Utah, was our guide for the morning and no one could stump him

Penstemon grandiflorus by the roadside

from identifying even the tiniest plants.

We drove up to Libby Pass at nearly 11,000 feet with even higher ridges to the north, still thankfully swathed in snow. There is a man-made rocky lookout here for visitors to scan the surrounding mountainside. It was a huge native, pink boulder called a stromatolite that brought many folks over for an impromptu geology talk by Dave Bentzin. This 6-million-year-old marble boulder was pushed up from its former sea floor over the ages. Discovered some years ago by Dave, a retired Denver-area petroleum engineer and weekend geologist, he later reported it to scientists at the University of Wyoming. The folds in the boulder have dark speckles in them, deposited by ancient wave action. The "speckles" are actually fossil bryozoans, one of the first single-celled animals to appear on earth.

Stromatolite, Libby Flats, with its discoverer Dave Bentzin

The rocky meadows were surprisingly plant-rich for the elevation and we were there at the right time. The Colorado state flower, *Aquilegia coerulea* var. *ochroleuca*, was growing beneath boulders around the lookout structure, and was somewhat miniaturized at about 12 inches tall and found in both blue and white colors. *Eritrichium nanum*, *Erigeron simplex*, and *Phlox pulvinata* mounded in a unique cushion. The *Polemonium viscosissimum* formed impossibly blue clusters. Looking like lavender-striped Easter eggs, the flowers of *Anemone multifida* were exquisite. After lunching at lovely Mirror Lake, some folks took a quick hike up to a higher lake along a trail scattered with huge silvery granite boulders. Large moose-like footprints were found on the muddy parts of the trail, but luckily the cantankerous owner wasn't seen. I enjoyed revisiting the miniature red huckleberry, *Vaccinium scoparium* which never tops 12 inches, with red berries the size of peppercorns.

Driving south toward Saratoga, we drove to the Sheep Rock area onto land owned by award-winning fiction writer, Annie Proulx. With her written permission, our goal was to find the extremely rare *Penstemon gibbensii*. The extremely sloping landscape with loose rock and prickly bushes made for rough hiking, especially in 90-plus degree temperatures. I joined a group clustered around a single specimen looking rather freeze-dried in the wind and heat. The lovely navy blue was still apparent. The whole plant was less than fist-sized. The small population was found here by Amy Taylor, during a floristic survey of the area. It

is only found on four sites in Wyoming, Colorado and Utah and is considered endangered globally (G1G2) and in the states as S1. Its threats come from off-road vehicle use, grazing antelopes, and oil and gas exploration.

After inhaling cold drinks at Saratoga, we then drove through the old mining town of Encampment, near the Colorado border, and up Battle Pass. Various searchers found *Penstemon cyathophorus* nearly bloomed out, plus *P. strictus* (purple-blue) and *P. whippleanus* in a light purple, both looking fresher. Everyone was ready to cover the miles back to Laramie for showers and supper. That evening, Stephen Love, Professor of Horticulture at Idaho State University, gave an enticing PowerPoint invitation to attend the 2013 meeting that he is hosting in Boise, Idaho. Tours will leave from there in three directions. Most interesting to me, is that one trip is going into remote Owyhee canyon country in the far southeast edge of Oregon that few of us ever see.

Penstemon gibbensii

The last day of the annual meeting offered an optional tour to visit the sand dunes of Carbon County, Wyoming, home to its most endangered plant, *Penstemon haydenii*, the blowout penstemon. Take about 30 (remaining) APS and native plant society members, add in about 15 curious government officials, add some heat, dust and sand—and you get a good picture of the trip to the penstemon site. We met 90 miles west of Laramie at the oil-processing town of Sinclair.

It seems that by the time somebody jumps all the hoops getting the signatures from private land owners to cross their land to visit an endangered plant, many other folks would like to piggy-back on the paperwork! So we had the enthusiastic attendance of many young scientists from an alphabet of agencies traveling with us. There was the Bureau of Land Management (BLM - they own the property and returned the next day to survey several other sites), Fish and Wildlife (they listed the plant as endangered first in Nebraska and then Wyoming), U.S. Forest Service, Wyoming Game and Fish, Nature Conservancy and… the National Park Service! Their rep was Kassy Theobald Skein, a restoration biologist working on native plant re-vegetation of the Grand Canyon National Park and new APS member.

The whole group drove about an hour to a rest stop on the banks of the North Platte River, complete with white pelicans floating by. We were joined by another carload of officials and given our marching orders - safety, water, etc. Amy Taylor, president of the Wyoming Native Plant Society, introduced various dignitaries, including Frank Blomquist, the proud discoverer of the first Hayden's penstemon site in Wyoming and a BLM wildlife biologist stationed in nearby Rawlins. He related the story of doing a survey of the BLM property with other scientists in July, 1996. Taking a stroll as he ate lunch, he climbed a nearby dune and came across a scattering of plants with silvery-blue foliage and 2-inch pink tubular flowers. Not being a botanist, but knowing they were unusual for the area, he took photos to Amy Taylor, then working on her Masters of Botany at the university. A group of curious folks soon returned to the site and took specimens, which Amy then keyed out to *Penstemon haydenii*, a highly endangered plant known only to exist in Nebraska. A specimen was sent to Dr. Noel Holmgren, a penstemon expert at the New York Botanic Garden, who has since confirmed her opinion.

The plant was given endangered status for Wyoming in 1998. It had gained that status in the western sand hills of Nebraska in 1986. Growing only in the cleared sandy "blowouts" left by buffalo, rolling to clean their hides, it lost ground as the animals were hunted nearly to extinction. Further hard use of the land by ranchers left it decimated into small areas of nine counties. Botanists at the University of Nebraska have worked for many years, growing young plants for re-vegetation, but are having disappointing results so far.

The whole entourage took off sedately, opening and closing gates for a one-hour drive that actually took two hours. At one point, the car in front of ours kept disappearing into a choking cloud of dust. We finally saw that this was caused by a road grader which we were happily able to pass. We rolled sedately through canyons, past a huge reservoir and large herds of cattle, seeing various dunes in the distance. On arrival, most folks grabbed their lunches-to-go and scrambled onto the dune chosen as the nearest and easiest to climb. I joined a group gathered around some plants with larger blue leaves than the surrounding grass—the penstemon!

Penstemon haydenii has no basal leaves, the 4–5 cm linear leaves, which are always opposite, begin on the lower stem, then continue higher up the stem, becoming wider to being several centimeters at the base, narrowing to an acuminate point. The inflorescences are congested with large pink to lavender flowers subtended by enormous bracts. They are said to smell like white chocolate! As I looked for flowers, I notice neatly clipped stems. We were skunked! It seems that they had actually bloomed in May with the early heat and drought in the Great Basin (and only one inch of rain in Laramie since January). Anything with moisture under those circumstances is manna for antelope or bunnies or deer or…

Sadly, as we meandered the huge dune, we saw only a few flowering stems, and those already withering, with a few more in seed. The seed stock for this area will be very scarce for this population, already beset by weeds.

One illustration of this plant's adaptability was a set of roots about 4 feet long, exposed on a collapsed sand ridge, which were connected to a living plant. Bonnie Heidel, BBCC lead botanist, said she'd been observing that individual for four years. She stayed behind to camp out overnight to continue surveying the next day and would be joined by returning BLM staff. The rest of us returned speedily to Sinclair with no road grader or car caravan to slow us down.

Another great APS meeting was adjourned until next time in Boise, Idaho, June 21-24, 2013. Check out the website <www.apsdev.org>.

But if one meeting was over it wasn't that long before another was on the horizon: the Eriogonum Society Meeting at Steens Mountain, Oregon. On that, I'll report in the next issue.

Penstemon haydenii, in seed, and Bonnie Heidel photographing *P. haydenii*

Ungernia sewerzowii - buried treasure in the seedex

Malcolm McGregor

SO THIS YEAR, I chose a lot of penstemons from the Seed Exchange but, as always, I chose various odds and ends as well, some of which just sound fun, some rare and difficult, and so on. Usually something turns up that I haven't tried before. This year it is a packet of five seeds of *Ungernia sewerzowii* - just five - they are big seeds. Now, I did know that they were obscure Central Asian bulbs from the Amaryllidaceae because at some point David Victor (a name known to some NARGS members through his contributions to bulb societies worldwide) had mentioned them to me, and that he was trying to find anyone who might be growing them.

I started my hunt for information by looking at the Pacific Bulb Society (PBS) website <www.pacificbulbsociety.org> where there is the comment that "Seeds are notorious for difficult germination and even if they do germinate, few growers have managed to keep the seedlings alive. The bulbs take a long time to mature from seeds." About *Ungernia sewerzowii,* Rix & Phillips (in *Bulbs*, 1989) report that bulbs do not bloom after a hot summer. However, as David Victor writes on the PBS website: "I suppose it is all down to what one thinks is hot. The following photos were taken at altitudes varying from 3,500 ft to more than 7,000 ft in early July 2008 and, in my estimation, it was hot, with temperature up in the low 90s!"

In answer to my email query David replied: "As they say, *Ungernia sewerzowii* can be difficult to germinate. The fresher the seed the better, as far as I know. I tried four times and managed to germinate a number of seedlings on the fourth go. That was with the freshest seed: the first three were from Halda and the fourth from my friend Vladimir Kolbintsev. Otherwise, it's pretty much the same as any other high alpine for germination. Keeping the seedlings is difficult. The killer is letting them be wet after they start to die back. The need to dry off for the summer and not be watered until they start to show in the autumn. Then gentle watering until they get going. The nearest I can think of are Juno irises." David's point, about fresh seed being better, is backed up by Mark McDonough who commented that "fresh seed from Panayoti Kelaidis's seed collecting trip... germinated like beans.... all were planted out on a steep embankment hoping it would provide the necessary drainage with no standing water whatsoever. The plants were a 'no show' in spring 2012, didn't see a single sprout, so I assume none survived."

I shall treat 2 of the five with GA-3, soak the others in water, and then chill 1 of those and 1 of the GA3-treated for 4 weeks, and sow the others immediately. And then keep my fingers crossed.

Ungernia sewerzowii in the Aksu-Dzhabagly Nature Reserve, which runs along the north slope of the western Tien Shan. As can be seen, flowering takes place when the foliage is dying down. Flowers vary in colour from pale yellow to a dark red-brown. The flowers are held on robust stems around 15 inches tall. (David Victor)

A new endemic Argentinian species of *Viola* L. (Violaceae) of the section *Andinium* W. Becker.

JOHN M. WATSON
& ANA R. FLORES

Viola beckeriana (fig.A), type population (F&W 12363). Historic Portillo pass. Cordillera de Tunuyán, Mendoza Province, Argentina. (Anita Flores)

A rosulate *Viola* (section *Andinium*), which has been confused both historically and recently with previously published species, is described here as new. *Viola beckeriana*, an attractive and floriferous plant, commemorates Wilhelm Becker, a German taxonomic botanist specialising in *Viola*, who was active during the first third of the last century and for a few years previously. He must without doubt be regarded as the foremost authority to date on the genus in its entirety, and the large section *Andinium* in particular. As will be detailed, Becker was slightly involved with this, his nominate novelty. Our awareness of the existence of *V. beckeriana* came about in a very unusual way, which will also be outlined. At present this Argentinian endemic is only known from one locality in the high Andes of central northern Mendoza Province. However, available evidence suggests it very probably has a somewhat wider distribution and significantly greater frequency. If so, these factors are masked by notably limited access to the region's imposing cordilleras. *V. beckeriana* completes our trilogy of publications in the *Rock Garden Quarterly* of new species dedicated to the memories of viola specialists.

Keywords: center of diversity, internet, mistaken identification, rosulate growth, single locality, Wilhelm Becker.

INTRODUCTION

To provide an overall context, according to latest informed estimates the genus *Viola* is considered to contain in the order of 580 to 620 known species (Marcussen pers. comm.). These are spread throughout the

Viola beckeriana (fig.B), type population (F&W 12363). Historic Portillo pass. Cordillera de Tunuyán, Mendoza Province, Argentina. (John Watson)

temperate regions and high tropical mountains of both hemispheres. Violets and pansies of the Northern Hemisphere are markedly better known, with sophisticated modern investigation now taking over from traditional field exploration (Ballard & Iltis 2012). The reverse situation holds for the majority of Southern Hemisphere taxa which are concentrated in the western half of South America, in particular along the Andes. Many are scarcely known, with undescribed species regularly being encountered, and more certainly awaiting discovery. Their predominant systematic group is sect. *Andinium*, to which the taxon described here belongs. Including the latter, together with the earlier pair of our *Rock Garden Quarterly* trio (Watson & Flores 2012a, 2012b) and another very recently described Peruvian (Ballard & Iltis 2012), the current count for this section accepted by the present authors stands at 95 species, with a significant additional number waiting to be written up and published. Section *Andinium* species are distributed between the equator and central-southern Patagonia. The main centre of diversity covers approximately 800 km (500 miles) of the temperate Andes between 32ºS and 40ºS. Our latest addition to the section is situated within these latitudes and so further swells the number found there to a total of about 50 species.

Initial knowledge for us of the existence of this delightful undescribed species of Andean rosulate viola resulted by chance and in a remarkably novel way. It can perhaps best be summed up as an extended means of exploration – or rather "armchair exploration" – which has only been in effective existence for the last couple of decades: the internet. While

Viola beckeriana (fig.C), type population (F&W 12363). Historic Portillo pass. Cordillera de Tunuyán, Mendoza Province, Argentina.17 December 2010. (John Watson)

searching on a home computer for details of a quite different Andean rosulate early in 2010, we chanced on a Flickr website with several outstanding images of an eye-catching viola. It immediately riveted our attention as something quite distinct we had neither seen or read of before. The plant had been photographed in the wild on 8 December 2008 during a botanical visit by members of the Station Alpine Joseph Fourrier (Jardin du Lauteret), France, to the main central Andes. The actual locality was precisely indicated as the Cajón de los Arenales, Cordón Portillo – Cordillera Frontal, at 3200–3400 m, above Tunuyán shortly south of Mendoza (Quetier 2009). It was captioned as belonging to the grex *Viola cotyledon* Ging., with a tentatively more precise identification as *Viola dasyphylla* W. Becker. In fact the latter was a well-based judgement, as *V. dasyphylla* is without doubt the closest known relative of our newcomer (Becker 1928b).

Once having located the Cajón de los Arenales on Google Earth, we started to plan a visit to the site from our home in Los Andes in Chile, just across the other side of the main cordillera. We recruited the company and assistance of our good Argentinian friend and colleague, Dr Roberto Kiesling, who now lives in Mendoza. Roberto has explored this region, in particular in search of his speciality, the Cactaceae, and knows it well. The

Viola dasyphylla, the closest relative of *V. beckeriana*, for comparison. Cerro Chapelco, Neuquén Province, Argentina. 6 January 2010. (Kees Jan van Zwienen)

three of us set out early on 16 December 2010, two years and eight days after Fabien Quetier had taken his photographs. The imposing setting is a panorama of sweeping, towering rockscapes, sculpted by former glaciers. The Arenales valley branches off to the south of the main valley, which continues up and over the watershed into Chile. At the branch is a small National Gendarmerie detachment post (Nº. 28 Squadron "Tunuyán"), whose staff were most supportive. With photographs of the valley from Google Earth to guide us, we eventually located the violas without much difficulty. Unfortunately, although our timing was quite close to the date of the Station Fourrier group's visit, all plants seen by ourselves in the Cajón de los Arenales were well past flowering that particular year, and we were only able to collect silica gel leaf specimens for cytological analysis. Disappointed, but reluctant to admit partial defeat, we Watsons returned the following day without Roberto. Continuing on further up the main

Looking back from the top of historic Portillo pass, Cordillera de Tunuyán, Mendoza Province, central Argentina. 17 December 2010. (John Watson)

gravel-sufaced, narrow valley road towards Chile (the Piuquenes Portillo Pass), we shortly did then encounter presentable specimens in flower.

The direct Becker connection with this particular viola relates to the first paper he published in the year of his untimely death (Becker 1928a). In it he undertook identification of a quite extensive collection of Andean violas by a German-Argentinian botanist who had been resident in Cordoba, Fritz (aka Federico, Friedrich) Kurtz. Becker identified four of Kurtz's collections, made in Mendoza Province between 1887 and 1900, as *Viola portulacea* Leyb. Two were from the mountains of the old Portillo pass. One of them, from the valley above Tunuyán ("Tunnyan"), can hardly be anything but our new species. A detailed explanation of why it is not *V. portulacea*, and also the apparent fate of the Kurtz collection, follow below after the type desciption.

By all accounts Wilhelm Becker (1874-1928) was an attractive and interesting soul after our own hearts. The following details are drawn from an obituary tribute to him by Rudolph Görz (1929). Far from being a mere single-minded viola freak ("violaholic" in our aficionado-speak), his interests ranged through music, a wider love of nature, and sailing. This is not to deny he was indeed an *echt* violaholic – and who could blame him! Music probably "ran in his genes" though. His father was a military musician who moved east from Halberstadt in the Harz region to Berlin while Wilhelm was still a young boy. At school in the new capital city he received a thorough musical grounding and excelled at the piano. Thoughout his life the love of music accompanied his working activities.

He possessed a fine baritone singing voice and performed solo parts – for example in Haydn oratorios, and also directed choirs. It is not unlikely he might have followed this bent as a career under other circumstances. But while he was still at school an interest in the natural world also took hold. This began – as it does for many of us – with childhood country rambles seeking out interesting local biodiversity, often in the company of like-minded friends. Youngsters tend to be more stimulated by active organisms such as insects, and Becker was no exception, although even then rare and colourful plants also drew his attention. When he was fourteen his father became seriously ill and unable to work, obliging Becker to return to Halberstadt and live with his uncle. The forced move to the country benefitted his growing involvement with natural history, and he began to make serious collections of insects and plants. His increasing knowledge led to him becoming a teacher in the discipline of botany at age twenty. Two years later he wrote his maiden paper, a survey of the flora of the surrounding Harz district. At that time he began to make botanical travels, particularly to the alps of central Europe. His lifelong devotion to the genus *Viola* also developed as a result of field observations in his home region. 1899 marked his first paper devoted exclusively to that genus. It presented his debut taxonomic novelty, a hybrid between two European species. His opening "exotic", well-known *Viola siehana* W. Becker, appeared in print in 1902, and was followed four years later by the first of 13 papers he devoted to the violas of South America. He had already previously published 24 others on the genus. His lifetime's achievement amounts to something over 100 papers, with all but a small handful exclusive to *Viola*. Our rough check reveals that he authored over 225 *Viola* species names. Needless to say, not all are accepted nowadays. Nevertheless, of 48 species belonging to sect. *Andinium* which currently bear the name of Becker as author or part-author, we accept 38, with the remaining ten either judged to be synonyms or doubtfuls (Watson & Flores ined.). Had the First World War not taken place, his output would have been yet more prolific. His relatively early and quite sudden death unquestionably robbed the botanical community of publications which would have presented in detail his overview of *Viola* and its components, in particular sect. *Andinium*. This is likely to have taken the form of one or more monographs. As it is we at least have the legacy of his rather cursory survey in Engler (Becker 1925). His best-known association is surely with the Berlin-Dahlem Botanic Gardens in his later years, where his international reputation led to the accumulation of a large and matchless collection of *Viola*, including much invaluable type material. This was totally destroyed by allied bombing in 1943, to the world of botany's eternal loss (Hagemann & Zepernick 1993). Becker married Marie Haase in 1914, and later named a violet for her. They were childless. We tapped every likely source for a photographic portrait of Wilhelm Becker – unfortunately and surprisingly in vain. His beloved violas will therefore have to serve as his visual memorial.

TYPE PUBLICATION AND COMMENTS

Viola beckeriana J.M. Watson & A.R. Flores, sp. nov. (Figs A-H, pp. 160-162, 169, 172, 173)

Type: Argentina, Mendoza Province, Tunuyán Department, Cordillera de Tunuyán, historic Piuquenes Portillo pass to Chile, 33º36´67.9´´S 69º31´30.3´´W, 2975 m, general habitat – lower SSE-facing slopes of quite loose, fine-detritus-surfaced valleyside with some scattered rocks and runs of stony rubble, the overall upper Andean herbaceous vegetation patchy and sparse to almost absent except for intermittent colonies of *Adesmia* cushion shrublets and occasional moister, green seeps: local ecology – this viola fairly frequent at intervals as small colonies by or near roadside, often on low banks of semi-stable, friable soil with dwarf, often scarce, accompanying flora, leg. A.R. Flores & J.M. Watson, 17 XII 2010, F.& W. 12365 (holotype MERL; isotypes SI, herb. Flores & Watson.)

Of Viola *section* Andinium *species,* V. beckeriana *is only likely to be mistaken in herbaria for closely related* V. dasyphylla. *Both share rosettes with comparable facies, leaves with a matching outline, and similar corollas, inter alia. Major clear discontinuities are: larger corollas and bilobed, not subtrilobed diagnostic style crest in* V. beckeriana, *where the lateral crest lobes are notably longer and more sizeable: also the longitudinal geographical disjunction of circa 500 km between the two species. As a result* V. dasyphylla *inhabits ecosytems of the northern Patagonian mountains to 2100 m, whereas* V. beckeriana *is adapted to high central temperate Andean conditions.* V. beckeriana *has seemingly also been confused with geographically adjacent Chilean* V. portulacea, *a taxon name which must be disregarded for general identification due to the species' inadequate and ambiguous protologue, sterile type material, and recent proven absence from the original site.*

Description: Perennial, glabrous, evergreen, rosulate hemicryptophyte. Rootstock axial, long, stout, flagelliform. Caudex very rarely solitary, usually much branched to form spreading, integral low mound of multiple rosettes. Rosettes (3–)4–6 × ca 1.5–4 cm, frequently strongly depressed at centre (i.e. apex of shoot). Foliage arranged spirally throughout shoot, imbricate but somewhat loose-set, stipules absent; pseudopetioles to ca 2 cm long, frequently red or red-tinged; leaf-blades gradually cuneate to base, narrowly-obovate to obovate, 5–8 × 2.5–5 mm, leathery-succulent, usually more or less glaucous, often markedly so, rarely green, base at times red or red-tinged, apex subacute to subobtuse, apiculate (or rarely not, on same plant); margin pale opalescent-cartilaginous, sometimes with fine, red, continuous line at junction with blade, minutely ciliate or subserrate towards base (or not, on same plant). Flowers solitary from upper leaf axils, forming irregular, often broken circle around rim of rosette, corollas obliquely upright- to horizontal-facing. Peduncles shorter than foliage, often red, with 2 narrowly lanceolate-subulate basal bracteoles 4–6 mm long. Calyx 5–6 mm long, somewhat shiny-viscid, pale red or red-tinged when peduncle also red;

all upper sepals equal, linear-subulate, inferior pair shorter, narrowly triangular-acute. Corolla white, lowermost petal strongly veined dark violet over face and with longitudinal yellow throat blotch, lateral and upper petals sometimes also slightly veined. All petals glabrous; superior and lateral petals oblong to obovate, apex usually blunt to subtruncate, sometimes shallowly emarginate, rarely tapered to rounded point, upper petals smaller, 6.5–7 × 2.5–3 mm, lateral petals 8–9 × 4–4.5 mm; lowermost petal broadly obtriangular-obcordate, with or without small point in apical sinus, 9–11 × 8–10 mm. Spur stoutly cylindrical, blunt, 2 mm in length, with two submarginal, papillose thickenings ca 1.5–2 mm long in front of opening. Anthers ca 1.5 mm long, lowest pair with filiform nectaries 1.5 mm long. Connectives equal in length to anthers. Style clavate above, terminating in distinct stigmatic beak; crest formed by two large, lateral lobes, oval or paddle-shaped, somewhat revolute, recurved. Fruit unseen.

Other material collected: Argentina, Mendoza Province, Tunuyán Department: Cordillera de Tunuyán, Cajón de los Arenales, 33º37´48.6´´S 69º31´11.7´´W, 2874 m, 16 XII 2010, F.& W. 12346. Ibid., F.& W. 12347. Ibid.. F.& W. 12348. Cordillera de Tunuyán, historic Piuquenes Portillo pass to Chile, 33º36´67.9´´S 69º31´30.3´´W, 2975 m, 17 XII 2010, F.& W. 12363. Ibid., F.& W. 12364.

The base of the lower Arenales side-valley from the junction with the main valley is predominantly blanketed by quite dense, low boulder thicket, including *Berberis empetrifolia* Lam. Above this, beginning at shortly under 3000 m, is a classic U-shaped valley, its sides and base largely formed by almost bare, even, pale stone scree. Separating the two is a low wall of rock with a basal apron of tumbled boulders and a more open, varied and generally dwarfer flora. It was here on our first day we found flowerless *V. beckeriana* growing on a shallow north exposure, although it is cut off from sun during parts of the day by the high canyon walls. The population was limited and scattered, but signficant. We did not explore the bare-looking scree sector higher up and further on, where the French group's plants must have been photographed. A description of our day two type habitat is given above. Among noteworthy accompanying high Andean flora seen were a cushion *Adesmia* shrublet; a prostrate, pretty, blue *Astragalus* sp., possibly *A. bellus* (Kuntze) R.E. Fr.; *Caiophora coronata* (Gillies ex Arn.) Hook. & Arn., *Calceolaria brunelliifolia* Phil, widely established *Cerastium arvense* L., *Lesquerella mendocina* (Phil.) Kurtz, also a *Valeriana*, a cushion *Oxalis*, and some bunch grass. We were greatly surprised to register one or two specimens of *Sisyrinchium laetum* (Ravenna) J.M. Watson & A.R. Flores so far from its recorded distribution in northern Patagonia (Watson & Flores 2009).

Our cursory survey suggests that *V. beckeriana* is quite widespread and reasonably plentiful in the sector, albeit as very local and scattered colonies. Short of the unlikely event of a major civil engineering project,

say re-adopting the old track as a new modern road pass, it does not appear to be unduly threatened. In all likelihood too, more populations exist within the fastness of these central cordilleras.

The diagnosis above confirms *V. dasyphylla* as the sect. *Andinium* species most closely related to *V. beckeriana*. Both have glabrous corollas of similar outline. Another mutual characteristic is the propensity to form significant spreading cushions of multiple rosettes. Those of *V. beckeriana* may contain at least 25, and in general tend to be more contiguous. One additional common property is for the rosettes of the two to be somewhat looser-set than in the majority of these sempervivoid violas.

Perceptibly larger flowers and style crest, the latter a critical character state, together with notable geographical disjunction, combine as usefully clear-cut and totally unambiguous differences of *V. beckeriana* compared with *V. dasyphylla*, and so served for the diagnosis above.

Further evident distinguishing features can be observed, however, which are either minor, or exhibit some very occasional overlap, or may be difficult or impossible to perceive in dried, pressed specimens, as opposed to living individuals in situ:

V. beckeriana – rosette diameter rarely 3 cm, usually 4–6 cm. Foliage as a rule at least somewhat glaucous, usually strongly so, often with clear-red or red-tinged peduncles, pseudopetioles, leaf-blade bases and at times submarginal lines. Basal half of blade margin minutely ciliate or toothed on at least a percentage of leaves per plant. Calyx commonly red or reddish at anthesis, never shiny black. Stigmatic beak prominent.

V. dasyphylla – rosette diameter 1–3 cm (or slightly more, including cited as 8 cm, surely an erroneous record). Foliage clear green, rarely also tinged dull reddish at tips and with dull reddish-lined blade submargins, but usually without this intermediate line. Basal half of blade margin glabrous, entire. Calyx predominantly shiny black in flower, becoming particularly noticeable during early fruit formation, otherwise occasionally green. Stigma not readily apparent.

In general, the individual overall appearances of the two in the life are perfectly clear at a glance, *V. dasyphylla* being smaller in all its parts and with pure green foliage, while *V. beckeriana* has large, as a rule more or less glaucous rosettes with a showier display of habitually larger flowers. These factors should at least also be more or less evident in herbarium specimens. Flowers of *V. dasyphylla* have at times been photographed with a pale violet-blue, creamy yellow or faint pinkish ground rather than predominant white, the only colour form known for *V. beckeriana*.

We have already mentioned four Kurtz specimens which were determined by Becker in 1928 as *V. portulacea*. That species was published by Friedrich (aka Federico) Leybold (1858). It was unusual in two respects. In the first place it appears to be the only species of sect. *Andinium* with type material exclusively in the sterile state other than *Viola congesta* Gillies ex Hook. & Arn., and *Viola volcanica*, Gillies ex Hook. & Arn., both

Viola beckeriana (fig.D), type population flower (F&W 12363) showing distinctive style crest. Historic Portillo pass. Cordillera de Tunuyán, Mendoza Province, Argentina. (Anita Flores)

Viola beckeriana (right-fig.E), type population flower (F&W 12363) showing distinctive style crest. Ciliate margin can just be seen on leaf to immediate right of upper petals. Historic Portillo pass. Cordillera de Tunuyán, Mendoza Province, Argentina. (John Watson)

Viola beckeriana (fig.F). Inner flower detail of dissected preserved specimen with petals and three sepals removed to show two upper sepals, curved style crest, and the two anther nectar spurs below. (Anita Flores)

Viola dasyphylla, the closest relative of *V. beckeriana*, showing style crest for comparison. Cerro Colorado, Neuquén Province, Argentina. 28 December 2007. (Anita Flores)

however, be sure now of the fertile, flowering appearance of those two Gillies species due to their unique foliage and widespread distributions. By contrast, even though he was only able to collect sterile material, Leybold had in fact seen flowers of his *V. portulacea* during earlier travels. He therefore described them from memory in his protologue, but unfortunately omitted details of style crest configuration and a full review of floral indumentum (if any), both vitally critical distinguishing features. He was not to know either in those early days that the apparently clear distinction of his sterile rosettes was a common feature of other *Andinium* taxa in the region yet to be discovered. The second untypical circumstance, which he himself remarked on, concerns the type site. This was situated low down in an exposed, summer-baked montane river valley at ca 1800 m, an adverse and otherwise unknown habitat for central temperate, perennial rosulate violas. He described it in painstaking detail, enabling the present authors to search extensively and exhaustively for his viola there, but without result. Neither *V. portulacea* or other accompanying Andean flora he describes exist in the sector any longer, which causes us to speculate they may perhaps have been a short-lived flowering on a landslip of recent occurrence during Leybold's time, which was presumably later eliminated by the unfavourable microclimate, and overrun by coarse valley-floor vegetation.

Leybold's type site, the only definite known locality of *V. portulacea*, lies 1000-1600 m lower and about 50 km west of the Tunuyán *Viola* population. Becker presumably judged them to be conspecific on the basis of broad geographical proximity (*V. portulacea* was described from the Chilean base of the same Piuquenes Portillo pass), their non-columnar rosettes, and the presence in both of cuneate leaves. Further evidence indicates beyond doubt he was mistaken though. Leybold describes *V. portulacea* flowers as blue ("*Las flores son azulencas*"), and while sect. *Andinium* flower colour variation in this range is no reliable guide, it should not be entirely ignored. Much more telling is Leybold's description of *V. portulacea* foliage as clear, bright green ("*un vivo color verde*"), a detail he further qualifies as 'eye-catching' ("*mui vistoso*"). Under no circumstances does this tally with the rosette appearance of *V. beckeriana*.

It appears that Kurtz's entire Argentinian *Viola* collection remained in Berlin-Dahlem subsequent to Becker's identifications rather than being returned to Cordoba, and was destroyed there along with the rest of the collection in 1943 (Xifreda & Sanso 1999). To some degree therefore any conclusions based on them must be speculative. Be that as it may, we feel it is unlikely Becker would have determined different collections in hand as the same species unless he was quite certain. This suggests these four Kurtz collections were probably all *V. beckeriana*, making their details worth recording, not least as three could be potential extensions of its distribution. They were, after Becker (1928a): (Argentina, Mendoza Province:) Cerro Nevado, 3000 m, 23-25 XII 1887, F. Kurtz, Herb. Arg. 5606. Cordillera de Malalhué, 30 I 1888, F. Kurtz, Herb. Arg. 5949.

Cordillera del Portillo de la Llareta, valle superior del Tunnyan (2500-2600 m) *in arenosis humidis passim*, 12 III 1900, F. Kurtz, Herb. Arg. 11028. Cordillera del Portillo de la Llareta, entre el Paso del Portillo (4300 m) y La Laguna del Diamante (3324 m), Vega de las Sulinillos, *in decliv. arenosis singulatim*, 20 III 1900, F. Kurtz, Herb. Arg. 11094.

Xifreda and Sanso (1999) cite Becker's identification of Kurtz 110948 (*sic*, surely intended as 11094?) to support the presence of *V. portulacea* in Argentina. In fact, considering the foregoing explanation, *V. portulacea* must not only be eliminated from the catalogue of Argentinian flora, but the name cannot effectively be attributed to any Chilean material other than the type specimen at SGO. Its rather curious status is effectively therefore that of an accepted but inapplicable epithet.

Viola beckeriana in flower is a very beautiful, unusual and impressive mountain plant. If it would germinate and adapt to cultivation, even in the hands of one or a few dedicated specialists, it would undoubtedly make a lasting mark.

ACKNOWLEDGEMENTS

As previously in this series, we extend our running gratitude to Thomas Marcussen for his constant informed technical input, and to NARGS for indulging us with the welcome and greatly appreciated opportunity to present these novelties in formal style, also for allowing such a rich photographic coverage of them.

Despite sadly having drawn a blank in our search for a photograph of Becker, we must thank those who tried to help us, in particular Dr Reto Nyffeler of Zürich and Dr Norbert Killan of Berlin-Dahlem.

Dr and Sra Kiesling provided us with a home-from-home and comfortable impromptu "workshop". Roberto not only guided us unerringly to our quarry, and has acted since as botanical intermediary, but he improved the shining hour in the field as ever with his delightful and knowledgable company. We greatly regret he could not be present at the crowning moment of triumph.

Last and by absolutely no means least, our debt to the Station Alpine Joseph Forrier group of 2008 in general, and Fabien Quetier in particular, is boundless. Without their selfless generosity in sharing the pictorial results of their exploration freely and publicly we would never have got to learn of the existence of *V. beckeriana* by now, if perhaps ever.

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Viola beckeriana, type population (F&W 12363). Opposite (fig.G) and above (fig.H - enlargement of part of upper left of picture opposite showing ciliate leaf margin). Historic Portillo pass, Cordillera de Tunuyán, Mendoza Province, Argentina. December 17, 2010. (John Watson).

For comparison (right), close-up showing glabrous, entire margins in *Viola dasyphylla*. Pino Hachado, Neuquén Province, Argentina. December 19, 2007. (Anita Flores)

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Bookshelf

They Bloom on Kamchatka Volcanoes

Alexandra Berkutenko
2013
ISBN 978-5-94729-126-1
Hardcover: 160 pages, 164 color photos
8½ x 12 inches.

This is a lavish and beautifully illustrated book about the plants growing on the four volcanoes that cluster at the southeastern part of Kamchatka peninsula: Avachinskyi, Korjakskyi, Mutnovskyi, and Kozelskyi. The text, in both Russian and good English, is concise and briefly summarizes the major ecological factors that govern the area. It is written in Russian, with a complete English translation.

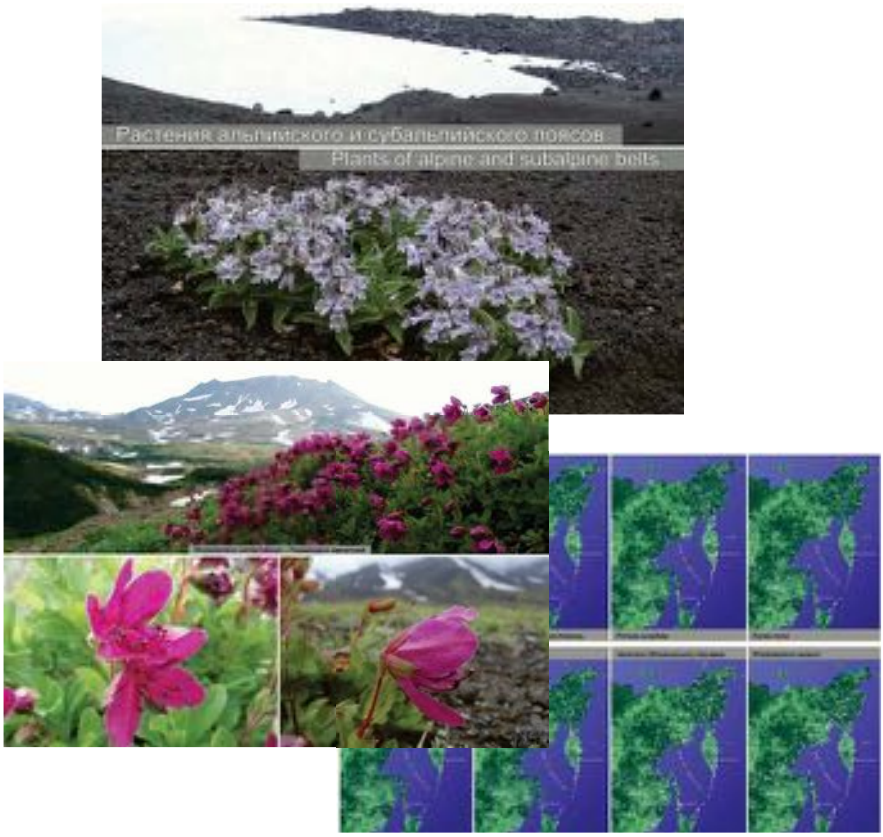
Dr. Berkutenko is the Head of the Botany Lab at the Institute of Biological Problems of the North, in Magadan, Far Eastern Siberia, Russia. She was a NARGS visiting lecturer and covered ten chapters and cities from Calgary to Philadelphia on a long speaking tour in the Fall of 1996. For many years, she published a well-regarded seedlist, containing seeds collected in the wild around Magadan, the Kamchatka peninsula, Vladivostock, and other locations in far eastern Russia. Many NARGS members now have these interesting - and very cold-hardy! - plants in their gardens as a result of her collecting expeditions.

This hard-cover book is then the result of vast experience. In album format, it contains 160 pages of text, divided into the following sections: Introduction, Physiogeographic characteristics, Climate, History of botanical investigations, Annotated

list of the vascular plants of southeast Kamchatka volcanoes (299 species), Distributional list of plants of the Kamchatka volcanoes, Summary, References, Index of genus names. The Supplement contains 154 photos of uniformly high quality. Sixty species of alpine and sub-alpine herbaceous species are represented, as well as 42 species of the stone birch-alder-Siberian dwarf pine zones. Eighty-eight maps show the distribution throughout the Russian Far East of plants mentioned in the text. Thus, we find that many are not narrowly confined to volcanic soils. There are 20 spectacular photographs of different volcanoes.

The Avachinskyi Volcano is 7600 feet high with nine glaciers. It last emptied in 1991, and lies at 53º 13′ N, 158º 51′ W, close to the Pacific coast of Kamchatka. For comparison, Edmonton (Alberta, Canada) and Haida Gwaii (Queen Charlotte Islands, British Columbia) are close to this latitude. It is thus well north of the lower forty-eight states and has a unique climate. The timber line on the mountains lies at about 2600 feet, and the book describes the flora which lies close to and above the birch-alder-Siberian dwarf pine zone.

The climate is very stormy with frequent deep depressions circulating off the Bering Sea. These produce very high winds and regular, sometimes heavy, rain in summer. On one occasion, as much as 15 inches fell in



a 24-hour period at Elisovo. In winter, snow fall is heavy and snow cover lasts from early November to April. The volcano plants are thus very well insulated in winter and can survive the occasional outbursts of arctic air, which once dropped temperatures to –42F at Elisovo, at the foot of the mountain.

Gardeners interested in growing plants from the Kamchatka volcanoes should concern themselves with soils. Those on the volcanoes are exceedingly well drained. At the park buildings on Avachinskyi, the soils are acid. Of particular interest to North American rock gardeners are many beautiful plants, among them the only Penstemon growing in Asia, Pennelianthus (Penstemon) frutescens, which ranges round the Sea of Okhotsk. It has been recorded in southern Kamchatka, the Commander and Kurile Islands, Sakhalin, and the Magadan area. It has spectacular flowers and would be a welcome addition to any rock garden.

Located in the region is the Nalychevsky Nature Park, a UNESCO World Wildlife Heritage site. Within it, the Kamchatka volcanoes, with their rich flora, spectacular scenery, fumaroles, and hot springs offer much to attract tourists, who will be hospitably received, as I was on a visit in 2002.

This is the only book on volcano plants in English of which I know. Alexandra Berkutenko has written a "must-have" book for serious rock gardeners.

To purchase this book, please contact:

Dr. Alexandra Berkutenko, Portovaja Street, 31/12 Apartment 40, Magadan 685014, Russia <berkutenko@yandex.ru>

Peter Korn's Garden

Cultivating Plants According to their Requirements

A review of the Swedish edition:

Peter Korns Trädgård

Odling pa vaxternas villkor

Peter Korn
2012
ISBN 978- 91- 637- 0462-8
Hardcover: 368 pages, over 500 color photographs. 23 x 21 cm.

Peter Korn has written and published a remarkable garden book in which he explains in a clear, easy-to-understand (if you can read Swedish), personal writing style what he has learned from creating the biggest private botanical garden in Sweden, which I visited last spring, on a five-acre plot east of Gothenburg in southwest Sweden.

He has toiled tirelessly through the growing season, up to 15 hours a day, and mostly by himself, for 15 years. During the last ten of those years he has transformed this original woodland habitat into an exciting variety of natural beds, imitating nature as a model to recreate conditions for growing easy to difficult to near-impossible plants. One can still find some traditional flowerbeds around the house, but it is the wild plants from high alpine regions, cliffs, steppes, prairies, wetlands, and deserts around the world that have captured his passion and attention.

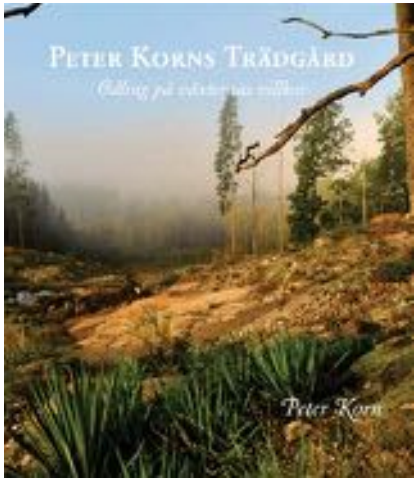
Peter has been extraordinarily successful in meeting the formidable challenge of cultivating these in his

garden. No project seems to have been too daunting for Peter. His positive attitude that it is possible to cultivate everything from the wild may arouse your curiosity and inspire a desire to try out his methods. The main challenge is to accept that there are no difficult plants, only special habitats that need to be recreated. In a nutshell, that is the real challenge: to create functional microclimates and habitats in which wild plants can flourish and reproduce. And it is this challenge that drives Peter and what the whole book is all about.

The book is divided into four parts. In the first part, one learns how the climate and the growing conditions change depending on where one is on a mountain, what the altitude is, and whether the location is windy or sheltered. Is it sunny? Shady? What is the aspect? The slope? In the final analysis, it is the climate that determines if it is at all possible to grow a plant or not. The climate influences the growing season and the prerequisites for the plants to establish themselves in different environments.

The second part deals with constructing sand beds, planting, and maintenance. It is here that Peter tells you the nitty-gritty details of his cultivating success. One must look at the existing basic conditions in a garden and use them to advantage in providing the right place for the right plant. Peter is best known for his success in using sand as the preferred growing substrate for plants. He uses sand in all his rocky beds and in most perennial beds.

First of all it is important to raise the beds to avoid standing water. A bed needs to have a depth of at least 8 inches of sand. All soil should be removed from a seedling's root clump to encourage roots to grow deep into the sand where they will find



moisture. The surface of the sandbed is covered with a thin layer of gravel and rocks. The last step is to drench the bed thoroughly to get rid of any air pockets that may have formed around the roots. Plants that need to grow in a dry habitat will thrive because these sand beds provide the roots with moisture at a deep level and also good drainage, while the top layers stay dry.

It is very important to cultivate the roots. Creating optimum conditions for the roots results in a balanced, easy-to-care-for bed, which, in turn, means no watering is necessary even during really dry periods. It might at this point be worth cautioning readers that this may only be applicable in places with summer rainfall, like Sweden. A plant grown in this type of bed also becomes hardier over time compared to one that is raised in more enriched soil.

In the third part we learn how various microclimates work in some selected beds. A created habitat in the garden can be adapted to provide different microclimates. Changing the slope of the bed slightly or covering it with a thicker layer of gravel makes a big difference. One can change

growing conditions appreciably by using rocks of different shape, size, and color. How and where the rocks are placed can improve the habitat to such an extent that a plant will thrive instead of merely limping along.

The fourth part is about seed propagation both in a pot and by direct sowing in the garden. It has a summary of all the general methods of seed propagation used by gardeners as well as his specific treatments.

The book is lavishly illustrated with over 500 photos from Peter's garden and from nature scenes all over the world. One can learn much about cultivation of rock plants just by studying the photos.

What stands out in my mind is the amount of knowledge Peter has amassed and the enormous amount of physical work he has put into creating his garden. This is an outstanding book by a master gardener about his successful approach to creating appropriate habitats for very demanding and tricky plants. I would recommend this book to all plant lovers. After checking out Peter's creation, ambitious gardeners may be inspired by his attitude and enthusiasm to try out his techniques in their own gardens.

This book can be purchased through:

<www.peterkornstradgard.se> or by emailing <korns.garden@gmail.com>

Many readers might feel that it was impossible to make sense of a book written in Swedish despite the internal logic and beautiful images within the book. If you are one of these, then you will be delighted to know that Peter's book is currently being translated and should be available in English before the end of the year.

NARGS 2013 ELECTION PROVISIONAL RESULTS

Following our first online election the provisional results are that the following were elected:

President: Peter George (for one year)
Vice-President: Harvey Wrightman (for one year)
Recording Secretary: Ben Burr (for two years)
Treasurer: Bill Adams (for two years)

Board Directors:
Gordon McKay (for three years)
Don LaFond (for three years)
James Locklear (for three years)

This result has yet to be certified.
It will be certified at the Annual Meeting on May 2, 2013.

The 2013 NARGS Annual Meeting will be held in Asheville, North Carolina, and will explore the flora of the Blue Ridge in the Southern Appalachians. The conference begins on Thursday, May 2, and concludes on Saturday evening, May 4. On May 3 and 4, field trips will take participants to view the flora of the region. A guide who is familiar with the area will lead each tour group, consisting generally of 11 to 14 people. Visits on your own to private gardens are scheduled for Sunday, May 5.

Additional activities include a guided tour of the gardens at the Biltmore Estate on the morning of May 2 and a two-day post-conference tour of the Blue Ridge north of Asheville on May 6-7. *These additional activities are not included in the registration for the meeting.* A complete description of all activities and an on-line registration form are available at www.nargs2013.org.

Field Trips

Field Trip 1: Southern Highlands Reserve and Coontree Trail
The Southern Highlands Reserve is a private garden and research center dedicated to the preservation, cultivation, and display of plants native to the Southern Appalachian Highlands. The Reserve replicates many of the plant communities typically found in the higher elevations. The tour also includes a visit to Coontree Trail that goes through rhododendron thickets, deciduous and evergreen woodlands, and along a stream. *Hike difficulty is moderate.*

Field Trip 2: Panthertown Valley, "Yosemite of the East"
Panthertown is known for its scenic beauty and biological diversity. The area includes granitic balds, blackwater tributaries, waterfalls, and alpine meadows in an array of habitats. *This is a strenuous trip due to uneven trails, steep terrain, and distance.*

Field Trip 3: Alpine Ericaceae
Set among balds and boreal forest surrounding the Graveyard Fields, this tour will observe five ericaceous genera rarely seen at elevations below 5,000 feet. The tour will also visit the "vertical bog" at Wolf Mountain Overlook. *This hike is rated as strenuous due to uneven trails, steep terrain, and distance.*

Field Trip 4: Graveyard Fields to Devil's Courthouse to Wolf Mt. Overlook
The trip includes a birch-sedge escarpment with giant ferns and drops through a beech gap into a "rhododendron hell" at Graveyard Fields and fire-maintained bogs. At Devil's Courthouse are alpine species that may be remnants from the last glacial period. The tour also visits the "vertical bog" at Wolf Mountain Overlook. *Hike difficulty is moderate*.

Field Trip 5: DuPont State Forest - Hooker Falls to High Falls
This tour visits DuPont State Forest to see rhododendrons, *Hexastylis contracta,* and numerous violas, as wells as Hooker Falls and Triple Falls on the Little River. *This hike is rated as moderate*.

Registration Form

The preferred method for registration is via the Registration form on the website (www.nargs2013.org). If you do not have computer access, fill out this form and mail it along with a check to the Conference Registrar: Bobby Wilder, 2317 Elmsford Way, Raleigh, NC 27608. Make check payable to "NARGS – Piedmont Chapter".

To register for the conference, you must be a member of NARGS national. If more than one person is registering for the conference from the same household, please complete a registration form for each member or guest (for dinners and evening programs).

Name of Member or Guest: _____

Street or Mailing Address: _____

City: _____ State/Province: _____ Postal Code_____

Country: _____ Phone: _____ E-mail: _____

Tour Choices: (enter top four choices for tours described on pp. 1 and 2):

1st Preference: _____

2nd Preference: _____

3rd Preference: _____

4th Preference:_____

Meal Choices (put an X in the box corresponding to your meal choice):

Friday Lunch: ☐ Beef ☐Turkey ☐ Vegetarian

Saturday Lunch: ☐ Beef ☐ Turkey ☐ Vegetarian

Friday Buffet: ☐ Roasted Chicken ☐ Pasta Primavera (Vegetarian)

Saturday Plated Dinner: ☐ Chicken Breast ☐ Beef ☐ Salmon ☐ Vegetable Napoleon

Registration Fees (enter amount in spaces to right side of item)

Registration (by March 2, 2013 - $300/person; after March 2 - $325/person) _____

1 year NARGS membership (if not already a member - $30/household) _____

Biltmore Estate Day Pass (can be used any day but Saturday - $49/person) _____

Biltmore Guided Garden Tour on May 2 ($20/person)* _____

Guest: Friday buffet and evening program ($35/person) _____

Guest: Saturday banquet and evening program ($40/person) _____

Post-Conference Trip on May 6-7 ($325/person double occupancy, $365/person single occupancy. Includes transportation, lodging in Banner Elk, lunch and refreshments.) _____

* Requires Day or Annual Pass to enter Biltmore Estate Total _____

Conference registration cancellations prior to March 2, 2013 will incur a $25 processing fee. There will be no refunds after that date.

Field Trip 6: DuPont State Forest - Cedar Rock Mountain & Hooker Falls
Also in DuPont State Forest, this tour goes to Cedar Rock Mountain, the largest outcrop of exposed granite in the region. Hundreds of acres alternate between bare rock, moss, and lichen-covered rock. *Hike difficulty is moderate*.

Field Trip 7: Fryingpan Mountain to N.C. Arboretum
This tour travels to Blue Ridge Parkway for a hike to an old fire tower on Fryingpan Mountain and to Big Bald, a great wildflower area. We will go to the Pisgah Inn for lunch and a panoramic view of the Blue Ridge. After lunch, the tour goes to the North Carolina Arboretum, where there is a fine collection of bonsai. *Hike difficulty is rated as easy*.

Other Activities

Speakers and Meals
Registration fee includes an evening reception and speaker on May 2, 3, and 4, plus lunch and dinner on May 3 and 4. The presentations each evening are:

Thursday, May 2 - *Geology of the Southern Appalachians*
James Reynolds III, Associate Professor of Geology at Brevard College

Friday, May 3 - *Wildflowers of the Blue Ridge*
Timothy Spira, Professor of Biological Sciences at Clemson University and author of "Wildflowers and Plant Communities of the Southern Appalachians and the Piedmont."

Saturday, May 4 - *The Southern Blue Ridge: Crucible of Life*
Patrick McMillan, Curator of the Campbell Museum of Natural History at Clemson University and Host of "Expeditions" TV show produced by South Carolina Public Television

Vendor Sales
The conference will also provide the opportunity to purchase plants, troughs, books, and garden art. See the website for details.

Post-Conference Tour
On May 6 and 7, Dr. Larry Mellichamp will lead an overnight trip to botanize along the Blue Ridge Parkway from Asheville to Banner Elk, NC. The tour is limited to 27 participants.

Meeting Location and Accommodations
The host hotel is the Doubletree Biltmore Inn. Rooms are available at special NARGS group rates of $120/night at the Doubletree (828-274-1800) and $85/night at the adjacent Sleep Inn (828 277-1800).

Registration

The Conference fee includes all programs, transportation and lunch on Friday and Saturday tours, reception hors d'oeuvres each evening, Friday evening buffet, and Saturday evening banquet. The Biltmore garden tour and post-conference trip to botanize along the Blue Ridge Parkway are additional.

Contact for further information:
David White, 919-306-1786, or email at administrator@nargs2013.org

NARGS Bulletin Board

President's Message

Here in New England, the weather in early February remains much as it has been since the turn of the year. But our garden-related tasks are taking on a new urgency, as the annual race to spring gets closer to the finish line each day. Seeds are potted up and placed outside for two to three months' exposure to the cold and snow of late winter. Pots we saved from last fall are cleaned and set aside for the (hopefully) huge flush of germination in late March and early April. We revisit the seed catalogues and start modifying our calendar to accommodate NARGS chapter meetings, garden visits, flower shows, and the Annual Meeting in Asheville, North Carolina in May. It's a strangely busy time, considering how little is growing, but it's part of our annual cycle, and one we cherish. Sometimes it feels like another New England winter is just too much to bear. But then we remember how we feel in early May, when the ground is warming, the sun is high in the sky, and the birds are singing at dawn as we begin working our way through the garden, looking for the volunteers we really want to keep and the volunteers that will soon be in the compost pile. It's the change – the cycle of the seasons and the expectation of new life every spring – that makes winter worthwhile and rewards us for the gray, cold days that sometimes seem to suck the energy and optimism right out of us.

For me, this season is even busier, as I try to squeeze NARGS business into my already busy life. A budget needs to be prepared; the Speakers Tour needs to be finalized; my Annual Meeting speech needs to be polished; the various NARGS initiatives need to be attended to (although, fortunately for me, our exceptionally skilled Administrative Committee handles most of that work); contracts for our small number of employees need to be reviewed and approved; and the committees need to be assisted as they get ready for the Annual Meeting. Lots to do, and sometimes the 10 hours a week I thought I'd be committing to this job just won't get it done.

By the time you read this the online election will be completed, assuring NARGS of its first truly democratic election. Our new website may be ready to go live. The process of scanning every issue of our Quarterly should either be complete or very close to it; this will finally make our entire archive of plant and garden knowledge available to all of our members. And perhaps you're reading this issue of the Quarterly online, something many of us are finding extremely appealing.

There are a few issues I'd like to mention. First, we have our Annual Meeting the weekend of May 3rd, and we'd love to have you all come. Obviously that won't happen, because even if everyone really wanted to come, the hotel only has room for about 215 people, so please register early. It's going to be a special

meeting in a special place, and I look forward to seeing many new faces as well as reconnecting with my longtime NARGS friends. So go to www.nargs.org and get your registration completed!

Next, we need a new group of volunteers to serve NARGS in various capacities, as many of our current volunteers either are moving back to their gardens or are term-limited under the NARGS bylaws. Please let me know if you have any interest in serving on one of our committees, which are listed on the NARGS website.

Third, we need a NARGS chapter or group of chapters to host the 2014 Annual Meeting. If your chapter has any interest, please let me know as soon as possible. I have feelers out to a few chapters, and one of them may well offer to serve as the host, but it never hurts to reach out to everyone, given the vagaries of our busy lives. And we also need an eastern and a western chapter to host the respective Study Weekends. Again, please let me know if your chapter is interested!

Finally, we need to raise some money for our organization. NARGS membership is holding steady for the most part, but our expenses are up and our interest income is down, creating a budget situation that is unsustainable for the long term. We can always reduce services, but we don't do all that much as it is; and if we have to cancel the Speakers Tour or cut back on the Seed Exchange or shrink the Quarterly, what will be left? So here's something that's easy to do, costs you nothing, and is a huge help to NARGS: When you plan to buy **anything** on Amazon.com, please get to the Amazon site by clicking the Amazon link on the **home page** of the NARGS website, www.nargs.org. We get a 6% royalty for being an Amazon affiliate – a royalty which, to this point, has earned us embarrassingly little. We could easily raise $10-15,000 a year without costing ourselves a penny by simply using the NARGS site as the entry point for all Amazon purchases. If we can all remember this, it will go a long way towards overcoming our current deficit and preventing future ones, so we can expand services, not reduce them.

Note: Punxsutawney Phil tells us here in the United States that spring is coming soon. I, for one, hope he's right!

Peter George, NARGS President

PATRONS

The following recently became NARGS Patrons

Julie Betsy Mitchell (Maine)
Laura Gregg (Pennsylvania)
Henriette Suhr (New York)
Michael & Hilary Clayton (New Jersey)
Katherine Mauney (North Carolina)
Radford MacFarlane & Steve Utkus (Delaware)

New Members

Welcome to those who joined between October 29, 2012, and February 2, 2013.

Bowman, Ruby & Chris Boardman, 1512 Leftland Dr., Longmont, CO 80501
Burch, Adam, 13494 Garfield St., Thornton, CO 80241
Courtens, Nick, Betty Ford Alpine Gardens, 183 Gore Creek Dr., Vail, CO 81657
Goodman, Debra, POB 534, Gunnison, CO 81230
Hancock, Dillon, Gardens on Spring Creek, 2145 Centre Ave., Fort Collins, CO 80526
Hansen, Pat & A. J. Poersch, 3660 S. Glencoe St., Denver, CO 80237
Lyster, Michael & Nora Morgenstern, 4535 W. 34th Ave., Denver, CO 80212
Weber, Michael & Sandi Berenbaum, 63 S. Fairfax St., Denver, CO 80246
Spingarn, Joel, POB 782, Georgetown, CT 06829
Savides, Larry, 1821 S. Noble St., Springfield, IL 62704
Yarber, James, 6877 W. Byron Dr., Fountaintown, IN 46130
Walters, Kellie, 304 Apple Pl, Ames, IA 50010
Fellows, James, 7516 Carroll Ave., Takoma Park, MD 20912
Wilburn, Marianne, 209 Third Ave., Brunswick, MD 21716
Willis, John, 8135 Ball Rd., Frederick, MD 21704
Brinson, Crystal L., 32 Narragansett Blvd., Fairhaven, MA 02719
Mitchell, Colleen, 3995 Monks, Pinckney, MI 48169
Prussian, Helen, 2265 Textile Rd., Saline, MI 48176
Richter, Theresa, 15106 Lakeside Rd., Lakeside, MI 49116
Sours, David & Marilee Olson, 2609 18th Ave. E., North Saint Paul, MN 55109
Carr, Sandra, 54 Wetmore Ave., Morristown, NJ 07960
Hiltz, Starr R., 19 Meadowbrook Rd., Randolph, NJ 07869
Clarke, Leslie, 23 Broadview Rd., Amagansett, NY 11930
Englander, Harriet, 10 Crescent Rd., Port Washinton, NY 11050
Maurer, Rhoda, 282 Washington St., Geneva, NY 14456
Mistry, Nari, 1159 Ellis Hollow Rd., Ithaca, NY 14850
Blasingame, Sam, 3407 Patton Rd., Franklin, NC 28734
Mitchell, Jean, 1002 Vickie Dr., Cary, NC 27511
Cryberg, Dawn M., 9531 Robinson Rd., Chardon, OH 44024
Yates, Douglas, 7540 Anchor Ct., Mentor, OH 44060
Johnson, Thomas, POB 9058, Brooks, OR 97305
Martin, Robert, 12445 SW King George Dr., King City, OR 97224
Hammerstrom, Frederica L., 542 Montgomery Ave., Haverford, PA 19041
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Knight, Martin Planas, 579 Chanters Ln., Tylden, Victoria 3444, Australia
Salomonovic, Katja, Rudolfsplatz 7/16, A-1010 Wein, Austria

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Morton, Jeff, 16 Vimy Rd., Truro, NS, B2N 4J4, Canada
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Palubeskie, Susan, 1275 O'Neill Rd., Oxford Mills, ON K0G 1S0, Canada
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Whiting, Luke, 14a The Bank, Somersham, Huntingdon, Cambridgeshire PE28 3DJ United Kingdom

A full NARGS membership list is available to members as an electronic PDF. For a copy email <nargs@nc.rr.com> with "Membership List" as the subject.

LIFE MEMBERS

The following recently became NARGS Life Members

Christopher Byra (British Columbia)
Richard Stockwell (Nottinghamshire, U.K.)
Sharlee Solow (Pennsylvania)
Benjamin Dukes (Virginia)
Jennifer Wainwright-Klein (Bavaria, Germany)
Leslie Clark (New York)

NARGS Donations Appeal

Donations between October 29, 2012 and February 2, 2013 - $1085

GENERAL FUND OR UNDESIGNATED

Shirley A. Meneice (New York)
Sally Konen (Idaho)
Sarah Strickler (Virginia)
Lori Skulski (Alberta)
Nancy Koltun (Illinois)
Patricia Highberg (Vermont)
Lynn Schueler (Washington)
Amal Moamar (Massachusetts)
Ann C. Watts (New Jersey)
Mary Stanley (Wisconsin)
Laura L. Stephenson (Pennsylvania)
Berta J. Atwater (Rhode Island)
Andre Legare (Quebec)
Patricia K. Apgar (New Jersey)
Joan Schwarz (Colorado)
Amy Fluet (Wyoming)
Jackie McBrearty (Pennsylvania)
Paul Dambrosi (New York)
Lynn Fulton (Colorado)

DESIGNATED

Bruce Lockhart (Massachusetts) - Web site development
Bobby Ward (North Carolina) - Seed Exchange

New NARGS Website - 3 things we need !

1 One important feature of the new website will be that the content will be managed by non-technical editors. We are looking for people who will take responsibility for specific sections or pages, initially under the direction of Malcolm McGregor. The website will not go online until June, but Content Managers can have a very valuable role in developing the website now. Anyone interested or wanting further information should contact Ben Burr <bnfburr@verizon.net> or Malcolm McGregor <mmcg@mmcg.karoo.co.uk>. No programing skills are necessary.

2 The new website will have a plant database that will be developed into a great resource for information on rock garden plants. Anyone interested in helping us put information into this should contact Jeremy Franceschi at <jfranceschi@charter.net>. Again, no programming skills are required.

3 There are still 20% of the members who have not let us know their email addresses. It helps us a great deal in preparing the membership database for the new website if we have them. If you did not get a "NARGS voting reminder" from Bobby on February 1, we do not have your email address. It will also help us if you give us a second email address where there are two members in a household. Please send your email address (or second email address) to Bobby Ward at <nargs@nc.rr.com>

THANK YOU!

NARGS Award for Service

When **Robin Bell** relocates to Oregon in the coming months, he will leave behind a legacy. As a long-time member of the Adirondack Chapter (not quite a charter member but close to it), he has been one of our most knowledgeable and involved. He has assumed leadership roles time and again - as a Board member and officer, as one of the organizers of the Winter Study Weekend we hosted in 2000, as literally a "moving force" when we constructed the Wurster Memorial Rock Garden, (as well as being its primary designer) and, on several occasions, our program speaker.

His love of plants is evidenced in his eclectic urban garden, expanded when he purchased the city lot next door to include troughs, rock gardens, woodlanders, unusual woodies, cacti, and more. We all benefitted from his willingness to share his plants and his gardens with the community. Robin is willing to travel for miles to view his most recent infatuation...trilliums. Within trillium circles he has been sharing a rapid-clumping form of the single *Trillium grandiflorum* 'McDaniels'.

Over the years Robin attended numerous NARGS conferences and toured alpine regions worldwide. It was often slide shows from these trips that he presented to us "armchair" travelers at Chapter meetings. We were always assured that Robin would be thorough in his preparations, showing off his astounding photography augmented by plant names and cultivation information.National members may recognize his name as he has been writing book reviews for the NARGS website.

The Adirondack Chapter is pleased to nominate Robin Bell for a Chapter Service Award. *Submitted by Carol Eichler.*

NARGS Seed Exchange

Many thanks to all who donated to our 2012-2013 Seed Exchange. Not only do all we seed-lovers depend on your generosity, but also **NARGS** would just be nargs without the seedex that you support.

We receive many levels of help in carrying out the many tasks involved in producing the annual seedex. Each year there are 15-18 groups and/or individuals among our U.S. members who rally each December (as though December weren't already hectic enough!) to re-package all those donated seeds, so that they may be shared among as many members as possible. Many thanks to all who lend their hands.

This year, the enormous effort involved with the two seed distributions was in the hands of two new chapters. Members of the Potomac Valley chapter, coordinated by its chair, Dick Hammerschlag, handled the main distribution of seed, with assistance from some members of the Mason-Dixon chapter. The Siskiyou chapter, under the guidance of Leigh Blake, Jean Buck, and Baldassare Mineo, completed the surplus seed distribution. We offer sincere thanks to all who worked so hard to distribute so many seeds to so many grateful members.

We especially appreciate the tireless work by the Seed Intake Manager, Laura Serowicz, who creates both Seedlists in a timely way, and is involved with every phase of the seedex. Our webmaster, Chris Klapwijk, wrote and supports the software for the excellent, easy-to-use electronic ordering system.

We hope you enjoyed the whole process: ordering, receiving, potting and, now, anticipating germination.

And, while you're watching all those plants grow, please give some thought as to how you can contribute to the next exchange. Surely, there are plants in your garden, or along the trails you travel, which would be appreciated by other members. Take note of them, and then take time to clean and mail them this summer: A very restful thing to do on those hot, muggy afternoons.

Between now and then, I wish you a great gardening season.

Joyce

[Joyce Fingerut, Director NARGS Seed Exchange]

<alpinegarden@comcast.net>

We have learned of the death of the following NARGS members

William B. Comai (Battle Creek, Michigan)
Colleen Schroedl (Clayton, North Carolina)
Mary F. Gray (Leavenworth, Kansas)
Frank Pratt (Anchorage, Alaska)

Personal Notice

Male 63, MA, USA, degrees in biology and medicine; seeking activity partner(s), with some rock gardening knowledge, for garden, outdoors, or nature related activities -- possible friendship. Life-long interest in plants. Single. Have humanist and progressive values. Now much interested in western USA rock garden plants, Clivia, caudiciforms, etc. "externmed" -- NARGS forum. <caswan2@netzero.net>

NARGS CHAPTERS (meeting place/area) & CHAIRPERSONS _____

Adirondack (Ithaca, NY)	Carol Eichler - carolithaca@gmail.com
Alaska (Anchorage & Mat-Su Valley)	Carmel Tysver - garden@gci.net
Allegheny (Pittsburgh, PA)	Albert Deurbrouck - adeurbrouck@verizon.net
Berkshire (Stockbridge, MA)	Judith Brown- jloveys@nycap.rr.com
Calgary Rock & Alpine Garden Society (Calgary, AB)	Cathy Kurio - cakurio@shaw.ca
Columbia-Willamette (Portland, OR)	Jan Jeddeloh - janjeddeloh@gmail.com
Connecticut (New Haven, CT)	Virginia Gingras - ginnygingras@netzero.net
Delaware Valley (Philadelphia, PA)	Mary Ann Ulmann - ulmannc@msn.com
Fells (Newbury, NH)	Thelma Hewitt - Tkhewitt@aol.com
Gateway (St. Louis, MO)	Bruce Buehrig - buehrig31@aol.com
Genesee Valley (Rochester, NY)	Betsy Knapp - eeknapp@rochester.rr.com
Great Lakes (Southern MI)	Patrick Ion - ion@ams.org
Hudson Valley (Westchester Co, NY)	Don Dembowski - dondembowski@optonline.net
Long Island (Oyster Bay, NY)	Donald Ohl - donohl@yahoo.com
Manhattan (New York, NY)	Michael A. Riley - ManhattanNARGS@verizon.net
Mason-Dixon (Norrisville, MD)	Joan King - jsking11@juno.com
Minnesota (Minneapolis/St. Paul, MN)	Michele Wallace - mrewallace@mwap.us
New England (Waltham/Boylston, MA)	Mike Saganich - ceruleanprism@yahoo.com
Newfoundland (St. John's, NL)	Todd Boland - todd.boland@warp.nfld.net
New Mexico (Santa Fe/Albuquerque)	Jean Warner - jean@cybercomp.net
Northwestern (Seattle, WA)	Donna Wylie - donna@dpwylie.com
Nova Scotia (Halifax & Truro, NS)	Jeff Morton - jeff.morton@dal.ca
Ohio Valley (OH & surrounding states)	Chuck Gleaves - gleaves.charles@gmail.com
Ontario (Don Mills, ON)	Veronica Callinan - vcallinan@sympatico.ca
Ottawa Valley (Ottawa, ON)	Zandra Baines & Linda Nishikawa - presidents@ovrghs.ca
Painted Hills (John Day, OR)	Gail Klodzinski - gailkathryn3@hotmail.com
Piedmont (Raleigh, NC)	David White - dmwhite_nc@yahoo.com
Pikes Peak (Colorado Springs, CO)	Leslie Flanigan - leslie@oldstage.us
Potomac Valley (Alexandria, VA)	Richard "Dick" Hammerschlag - peachnfrog66@comcast.com
Quebec (Montreal, QC)	Robert LeClerc - leclercr@bell.net
Rocky Mountain (Denver, CO)	Mike Kintgen - kintgen444@hotmail.com
Shasta (Etna, CA)	Barbara Coatney - barcoat@sisqtel.net
Sierra (Sonora, CA)	Dianne Szymanski - dgszymanski@gmail.com
Siskiyou (Medford, OR)	Lillian Maksymowicz - lillian@jeffnet.org
Southern Appalachian (Asheville, NC)	Mary Blackwell-Kemp - sargsnc@hotmail.com
Wasatch (Salt Lake City, UT)	Tony Stireman - tonystireman@msn.com
Watnong (Far Hills, NJ)	Michael Wilson - missycat10@verizon.net
Western (San Francisco Bay area, CA)	Ted Kipping - tkippingsprint@earthlink.ne
Wisconsin-Illinois (Madison-Chicago)	Dave Collura - jdsongraham@aol.com

NARGS Structure

The officers of the North American Rock Garden Society consist of a president, a vice-president, a recording secretary, and a treasurer. The officers are elected by the membership at an annual meeting.

The Board of Directors of NARGS consists of the four above-named officers, the immediate past president of NARGS, nine elected directors, and the chair of each NARGS chapter. Chapter chairs are required to be NARGS members by NARGS by-laws.

The affairs of NARGS are administered by an Administrative Committee (called AdCom) consisting of the president, vice-president, recording secretary, treasurer, and one director-at-large, selected annually by the NARGS officers from among the nine elected directors.

Officers

President	Peter George, petergeorge@verizon.net PO Box 833, Petersham, MA 01366
Vice President	Harvey Wrightman, wrightman@golden.net RR#3, 1503 Napperton Dr., Kerwood, ON N0M 2B0
Recording Secretary	Ben Burr, bnfburr@verizon.net PO Box 549, Bellport, NY 11713
Treasurer	Bill Adams, 330 Carlile Ave., Pueblo, CO 81004-1054
Director-at-Large	Betty Anne Spar, 206 Wolfe St., Alexandria, VA 22314
Immediate Past President	Grazyna Grauer, Dublin, OH

Directors of the Board

2010–2013	Jane Grushow, Ephrata, PA Philip MacDougall, Surrey, BC Anne Spiegel, Wappinger Falls, NY
2011–2014	Lola Lloyd Horwitz, Brooklyn, NY Janet Novak, Philadelphia, PA Betty Spar, Alexandria, VA
2012–2015	Jan Jeddeloh, Portland, OR Matt Mattus, Worcester, MA Gwen Moore, Lakewood, CO

Managers

Executive Secretary	Bobby J. Ward (919) 781-3291 PO Box 18604, Raleigh, NC 27619-8604 nargs@nc.rr.com

Back cover: *Pulsatilla patens* - Lori Skulski

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