

THE ROCK GARDEN 149



July 2022

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The Rock Garden

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(Photo: Ger van den Beuken)

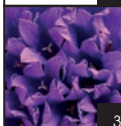
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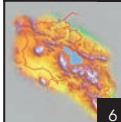
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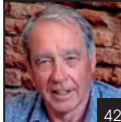
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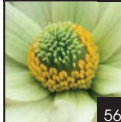
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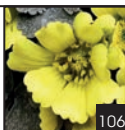
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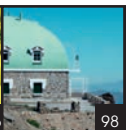
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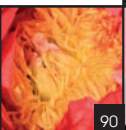
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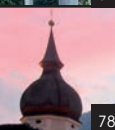
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The Editor welcomes articles, photographs and illustrations on any aspects of alpine and rock garden plants and their cultivation. Authors are encouraged to submit material electronically but articles may also be submitted in manuscript. Digital images are particularly welcome; high quality prints or drawings may also be submitted.

The normal deadlines for contributions are 1st November for the January issue and 1st April for the July issue. These dates also apply for material for the Yearbook and Show Schedules.


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The 4th Czech International Rock Garden Conference will be held 5 May to 9 May 2023 at the Hotel Floret in Průhonice near Prague, Czech Republic.

Please visit <https://czrgs.cz/conference.html>

A Czech Influence Zdeněk Zvolánek

When I joined the Prague Club of Rock Gardeners in 1970 everyone grew collections of *Saxifraga* species and hybrids from the *Porophyllum* section called kabschias. The best specimens were grown for show purposes in tufa (soft travertine) boulders or in crevices in rocks in stony farmers' troughs. Old German and English cultivars were propagated with natural Alpine and Balkan species. During this era the English cultivar *Saxifraga* 'Winifred' was imported into Bohemia; it is the queen mother of many splendid Czech hybrids. František Holenka bred with *Saxifraga* x *boydii* and called it *Saxifraga* 'Karel Capek'. A strong advocate of the kabschia *Saxifraga* passion was Radvan Horný, who wrote the bible of the *Porophyllum* section species and cultivars; he made fine hybrids, exported to Lincoln Foster in the USA, and gave his collection to a youthful electrician – Karel Lang. Young Karel loved cultivating and pollinating floriferous perfect-cushion plants. He went on to breed kabschias for forty years and is the best in the world in this divine discipline. His hybrid *Saxifraga* 'Evening Star' covers itself with large soft yellow flowers for fifteen years, anchoring its roots in the concrete alpine house base. This natural miracle is more than thirty cm in diameter. Karel hybridised all kabschia species, aiming at unusual colour, improved flower size and compactness of cushions. His breeding focuses on controlling hand pollination. He was greatly assisted by the unusual activities of Czech explorers and collectors who introduced new species and forms. Wonderful breeding plants are *S. dinnikii*, *S. columnaris*, *S. ludlowii* or *S. kotschyi* from Kurdistan. The latest cross is of the white Iranian *S. ramsarica* with deep pink Tibetan *S. ludlowii*. It led to a flock of new cultivars, one named after the less-known Czech breeder Oldřich Maixner.



Oldřich and Jan Burgel are at present describing their cross (2008) named after the famous friend, *Saxifraga* 'Karel Lang' (below). They used a natural Caucasian miniature hybrid *Saxifraga* x *dinninaris* (*S. dinnikii* x *S. columnaris*) as the pollen parent and the great British mother *Saxifraga* 'Winifred'. The result has an unusually dark violet colour and very dense performance. The plants form cushions from open rosettes of diameter about five to six mm. Leaves are linear to subulate, dark green, up to four mm long, about one mm wide, encrusted by three to five pores at the tip. Flowering stems are about ten mm long with violet and green glandular hairs, stem leaves are five or six, green, violet at the base and slightly patent. Sepals are violet, green at the tip, densely glandular hairy. Flowers are vase-shaped, open and dark violet. Petals are obovate, overlapping, nine or ten mm long, seven to eight mm wide, with prominent nerves and slightly toothed. Stamens, stigma and nectary ring are violet. This plant is perfect for cool and moist places like Scotland.

František Paznocht, a Czech emigrant to Bavaria, chooses easily-grown Balkan species *Saxifraga ferdinandi-coburgi* 'Dracula' and selects seedlings (with pollination by bees) in his kabschia collection that is grown on large raised tufa beds. One result is the friendly saturated-yellow hybrid *Saxifraga* 'Darina', suitable for poor warm and dry gardens.

The advances in the quality of our Bohemian *Saxifraga* assortment should be compared with the strong improvements in Czech rock gardens and their variety, owing to keen and brave Czech collectors and to our local artistic gardeners.

Your best chance to see these beauties and many others is to participate at the Fourth Czech International Rock Garden Conference, to be held 5-May to 9-May 2023 at Hotel Floret in Průhonice near Prague, Czech Republic.

For up-to-date information, visit <https://czrgs.cz/conference.html>



Saxifraga
'Karel Lang'

Muehlbergella oweriniana (Synonyms: *Hedranthus owerinianus*, *Edraianthus owerinianus*)

Cyril Lafong

I grew *Muehlbergella oweriniana* (as *Edraianthus owerinianus*) several times in the past and they proved to be the wrong plants, the leaves being green or silvery, over one cm long with acute tips, and they turned out to be *Edraianthus pumilio* most of the times. Then in 2017 I got two plants of the true *Muehlbergella oweriniana*, which has short leaves with blunt tips and sessile purple to blue flowers. Every year they produced a few flowers at the end of May but last year (2021), one of them flowered very well. The other plant only had half the number of flowers but was still better than in previous years. Since I received them, they have been potted on twice in a well-drained loamy compost and are now in fifteen cm diameter clay pots plunged in sand in a large alpine house with a sunny aspect. In hotter countries, the plant will probably not tolerate the heat in a greenhouse and should be grown outside in a shady position. I tried a small plant in a trough in 2020 but it did not survive the fairly cold 2020/2021 winter. However, Czech growers grow it in sharply drained crevices or in lava rock outside

Muehlbergella oweriniana, showing flower buds in 2020





Muehlbergella oweriniana, in flower end of May 2021

where it survives but does not flower so well. The experience of several growers is that the plants do not usually flower well in cultivation.

I do not know why my plants flowered so well last year. I think it must be a combination of factors: weather pattern; dilute feed (half strength, high potash) which I applied fortnightly during the growing season; and perhaps some clones are more free flowering – which might explain why one of them flowered much better than the other. I tried cross pollinating the two plants but did not get any seeds (it was cool in June) but I have successfully made cuttings of the good flowering clone. In 2018 I received seeds that were sown in November and germinated in spring 2019. Of the few seedlings, only one survived, now in a ten cm pot but has not yet flowered. In winter the whole cushion looks dead, with individual rosettes looking brown, but close inspection reveals tiny green leaves in the centre.

Muehlbergella oweriniana hails from Dagestan, a republic of Russia situated in the North Caucasus of Eastern Europe, along the Caspian Sea, where it grows in a restricted area between vertical cracks

and calcareous rocky ground at altitudes 500 m to 2500 m. This place is well separated (2000 km east) from the geographic distribution of the genus *Edraianthus* in the Balkans. It has short (about 0.5 cm long), shiny, green linear leaves with blunt leaf-tips and solitary sessile blue to purple flowers at the end of May. It forms a tight hemispherical (dome-shaped) cushion which in Nature can get fairly large.

This species is critically endangered. The true plant was introduced in cultivation only in 2013 when Ramazan Alibegovich Murtazaliev and Pavel Křivka collected seeds for the first time. Good germination meant that this rare plant is now slowly getting established. The reasons why this species has not been in cultivation until now are the inaccessibility and the politically dangerous nature of the place where it grows.

Muehlbergella (in honour of Friedrich Mühlberg (1840–1915), a Swiss geologist) is a monotypic genus in the family Campanulaceae. It contains a single species, *Muehlbergella oweriniana*, and the name was published in 1890 by Swiss botanist Heinrich Feer, who transferred it from *Edraianthus owerinianus* (published in 1875) on the basis of unique characteristics different from plants in the genus *Edraianthus*. This change is not universally accepted but the new name is used by most modern taxonomists and botanists. The Latin specific epithet of *oweriniana* refers to the original collector, Alexander Pavlovič Owerin, a Russian botanical collector who had collected plants from the mountains of Dagestan and other places in the Caucasus.

Propagation is from seeds sown in late autumn, taking about three months to germinate. Basal cuttings in late spring or early summer will root in four to six weeks.

Muehlbergella oweriniana, January 2022



A topographic map of Armenia, showing its mountainous terrain with various peaks and valleys. The map is color-coded by elevation, with green for lower areas and yellow/orange for higher ones. A red line outlines the country's borders. A large blue lake is visible in the central-eastern part of the map.

Travels round Armenia

Tamar Galstyan

"The distance between two cities is only a centimetre on the map: why are we driving three hours?"

"We heard that Armenia is a mountainous country, but we did not realise that it is so extremely mountainous."

"We're not sure which is best in Armenia – food or flowers!"

These are the most common expressions I hear from people who travel here for their first time. I have never been surprised at meeting folk who have no idea where and what Armenia is. When I mention my country I usually hear: "Armenia? *Where is it?*" A few times I have been asked – "Armenia? *Maybe you mean Albania?*" If I introduce my country in a short way, I simply say that it was a part of the Soviet Union. Everybody in the world knows the old Soviet Union; at least, many people have heard of the USSR, although it stopped functioning in the early nineteen nineties. We Armenians have our own distinctive alphabet and language. Our alphabet was invented in AD 405 and consists of thirty-nine letters. Almost all of us speak Armenian, three-quarters speak Russian, although English is becoming increasingly popular. I usually add that Armenia is also a part of the *Caucasus*: now, perhaps, dear reader, your own interests are piqued?

Topographic map of Armenia published under terms of:
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You cannot see my country on the map unless you zoom in and look carefully. This dot on the map of Eurasia is about 29 thousand square kilometres, well under half the area of Scotland, about six percent of Sweden or California. All our neighbours (Turkey, Georgia, Azerbaijan and Iran) are much bigger. In short, Armenia is one of the smallest countries of the world.

An important point about Armenia is that it is a mountainous and landlocked country. There is no sea level zero here: the lowest point is 375 m above. The average altitude is about 1600 to 1800 metres above sea level. The highest point is 4090 metres. It has 85.9% mountain area, more than Switzerland or Nepal. Within those thousands of square kilometres are many different climate zones: from everlasting snow caps and glaciers to warm humid and subtropical regions; there are semi-deserts, deep humid gorges and breath-taking canyons; massive valleys are covered with bright-coloured meadows. This geographical and topographic diversity supports a rich flora with more than 3600 recorded species.

Our climate is typically markedly highland continental. The summers from June to mid-September are hot, dry and sunny with temperatures between about 20°C and 36°C. However, low humidity helps mitigate the high temperatures. The evening breezes that descend the mountains give a welcome cooling effect. Springs are short, while

Colchicum szovitsii







Iris lineolata

autumns are long, being well-known for their vibrant and colourful foliage. In practical terms, what I love most about this entrancing diversity is that even in a hot and dry summer you need only drive just a couple of hours to see alpine carpets and snow-melting streams.

How might you plan your first expedition?

Before I travel to a new country, I make a list of what I would like to see there. First of all, I want flowers, with the irises at the top of my list. I love irises and I want to see all of them that I can. If you think similarly, the best time to make your first visit is in late April and – of course, in the northern hemisphere – May. In May Armenia looks like a paradise of bulbous plants. You drive out of Yerevan, the capital, for an hour or so, stop the car somewhere on the road and walk to the hills. Hills and

Facing: *Iris iberica* ssp. *elegantissima* 🍁

mountains abound everywhere in our country so, wherever you walk, you walk up and down hills. And even if you don't know the definite locations of irises or tulips, there is a great chance that you will at least see *Muscari armeniacum*, *M. neglectum*, *Leopoldia caucasica*, *Bellevallia glauca*, different *Gagea*, *Colchicum*, *Allium*, *Ornithogalum*, and the long dark yellow stems of *Eremurus spectabilis* on the high rocks.

Iris imbricata



Irises

I appreciate that the priority of many other plant hunters like myself is to discover and appreciate irises. So, if we try to make a calendar of the Armenian ones, it will look approximately like the following.

Juno irises and *Iris reticulata* flower first, usually in late March or early April although one can find them in full blossom even up to mid-May. All junio irises except *I. caucasica*, which grows almost everywhere, grow in the south of the country. So, if you are going to travel in April, include the southern regions in your itinerary. Things are much easier with *I. reticulata*. It is an unpretentious plant and is comfortably at home in almost all parts of the country.

Tulipa sosnowskyi



Iris iberica (*I. iberica* ssp. *elegantissima*, *I. iberica* ssp. *lycotis*) starts showing its divine blossom in mid-April. Remember that you only have a week or a fortnight to catch this queen of the Armenian Highland in flower. If you miss these crucial days, you will have to come back another year.

Iris lineolata (*I. acutiloba* ssp. *lineolata*) and *Iris grossheimii* are wonderful little beauties, often hidden in grass. It is far too easy to miss them if your eyes are not trained to see the small pale purple or mauve dots among the thorny bushes of *Astragalus microcephalus* and the dead grass of the previous year. In lower places of the south of the country, they start flowering in late April to early May. But in higher ground you may sometimes see *Iris lineolata* even on into June.

If you want to see millions of irises, go to the south of Armenia. Here, you will find huge slopes covered with yellow heads of *Iris imbricata* surrounded by its plentiful green sword-shaped leaves. This is an amazing species. Its flowers open alternately: when there are one or more open flowers on a plant, there also are a couple of buds waiting for their time to come out. This iris often makes a community with orchids, tulips (*Tulipa sosnowskyi*, *T. florenskyi*) and other lovely species. Consequently, whenever we see *I. imbricata* we may be sure that somewhere nearby there are other wonderful plants.

Little *Iris pumila* is a species that often grows in strange places. I once saw a big population of its dark-violet and yellow plants by a busy road. It often grows on our roadside slopes but, because it really is a “*pumilus*” plant, the people rushing past rarely see it (*pumilus*: *dwarfish*, *dwarf*, *diminutive*, *of short stature*). Things are much easier with *Iris paradoxa*:

Pulsatilla armena

Facing: *Iris pumila* 🍁





this species is not as rare as its close relatives and you have a good chance of finding it during your journeys in May and June. It grows with other irises, tulips and orchids and, when compared to their own remarkable beauties, it has no claims to any egregious superiority.

The subgenus *Limniris* in the genus *Iris* is characterized by rhizomes as opposed to bulbs. A lack of beards distinguishes it from the subgenus *Iris*. Unfortunately, *Limniris* are quite rare in Armenia and you must know where exactly to go to see them. But they offer the great advantage that they flower later, meaning that even in June you will have a high probability of seeing them.

In addition to May's bulbous plants you can admire almost all Armenian *Nonea*, little violets, golden-glossy flowers of *Ficaria*, shaggy *Pulsatilla armena*, little blue stars of *Anemone caucasica*, delicate *Primula algida* – which makes carpets along with *Fritillaria caucasica*, *Iris caucasica*, *Scilla rosenii* and *Colchicum szovitsii*. White-pink-violet *Polygala anatolica* bloom in the vicinity of *Iris pumila*, *Muscari armeniacum*, *Fritillaria kurdica* and fragrant *Allium woronowii*. *Viola somchetica* may be distributed in the rock crevices above *Fritillaria collina* and *Primula ruprechtii*. There are yellow-purple bells of *Hyoscyamus reticulatus* and silver *Matthiola farinosa*, growing with *Iris elegantissima*, beautiful *Gladiolus atroviolaceus* and early plants of the Fabaceae family, together with orchids and various *Ophrys*. I realise

Scilla rosenii





that this list is long but it is full of enormous plant-finding potential that delights visitors.

But here is a cautionary note: be careful when planning your trip for irises. I remember a year when there was a half metre of snow in the sites where they grow; despite all our plans and schemes, the mountains always make their own rules.

June

Were you to ask me what is my favourite time to travel in Armenia I would reply – it is June. Sometimes, when spring is late you can find most spring flowers in June. And, as a bonus, there are early summer flowers. I love it when I find late tulips (*Tulipa julia*), different *Bellevia*, pink and yellow alliums among the reddish-purple bushes of *Salvia hydrangea* and whitish *Allochrysa versicolor*. *Nectaroscordum tripedale* flowers in June in some neighbourhoods with bright yellow *Lilium armenum* and purple or pure white *Campanula latifolia*. It is June when you may drive up the mountains and find *Fritillaria collina* among the flowers of *Rhododendron caucasicum* and *Daphne glomerata*.

It is only in June that the meadows are plentifully filled with hundreds of reddish *Dactylorhiza* among the millions of yellow buttercups. The slopes are covered with mauve and snow-white flowers of *Anemone fasciculata* that wave with the mountain wind, there are valleys of countless red poppies, the

Nectaroscordum tripedale



fields are covered with dark violet *Consolida orientalis*, and hundreds of curly bushes of *Crambe orientalis* open their fragrant flowers this month, colouring green valleys with a white that fits the snow caps of our mountains.

June is the month when you may freely pick white, juicy and sweet mulberry berries somewhere while strolling through our villages; the locals never mind about that; and do try some just-picked apricots and cherries. This is the season when you may enjoy pleasant summer sun with little serious concern about sunburn at lower levels. Be more careful with the sun when you drive up to 3200 metres to see still colourful carpets with *Colchicum szovitsii*, *Scilla armena* and *Puschkinia scilloides*. You may also need gloves and a warm jacket, because sometimes a thick cover of snow by the road remains till mid-June. But, in short – June is the best time to plan your second trip to Armenia.

July

“What about July?” you may ask. I believe that July is the period for botanical gourmands. It is a time when you have already gorged your appetite on irises, fritillaries, orchids and tulips and now seek what is hidden from the eyes of the most people. It is a time when we mostly resort to the heights of the mountains at two to three thousand metres.





Consolida orientalis with red *Papaver macrostomum*





To see little *Vavilovia formosa* growing with bright blue *Delphinium foetidum* and *Aconitum nasutum*, you have to be here in July. You may expect to enjoy our steppe meadows with their huge stands of *Verbascum speciosum* growing among thousands of *Allium fuscoviolaceum*, light violet *Scabiosa caucasica* shaking with the mountain wind, spiny heads of *Echinops transcausicus* covered with little azure flowers, thousands of different *Centaurea*, *Stachys* and *Dianthus*: you would certainly love travelling here in July. It is the time when white waves of *Stipa* tremble in the mountain breezes, making the slopes look like a breezy white-topped sea. Young storks search for food in the wetlands of the Araks river valley among the curly trees of *Tamarix*. Perhaps you may see three, five – or even more – butterflies enjoying sweet nectar from one single head of *Carduus nutans*.

There are bodily pleasures too. The bravest Armenians swim in Lake Sevan in July because the temperature of water might reach 20°C during sunny days. Sevan, or the *Pearl of Armenia*, is the biggest freshwater lake in the Caucasus, at an altitude of 1900 m above sea level between two flanking mountain ranges.

Approaching my conclusion, Armenia is a place to visit at most times of the year and to discover lots of interesting and beautiful things: flowers in season; late or early flowers that missed the regular times of blooming; breath-taking landscapes; vultures and eagles soaring above your head; broken medieval monasteries; and people who are still very close to Nature.

September, Sevan: *Verbascum thapsus*



I write these words while travelling in the south of Armenia on 13th of January 2022. Only the previous day I was admiring the flowers of *Sternbergia fischeriana* and *Galanthus lagodechianus* (Cover Picture, *The Rock Garden* 148). They were the purpose of my trip to this region and my mission was accomplished in January!



Sternbergia fischeriana



Sternbergia fischeriana

Facing: *Iris lycotis* 🍁

By the shores of Lake Sevan: *Echinops transcaucasicus*







Orchis punctulata is quite a large species of orchid, reaching a height of half a metre or thereabouts. It may be found in meadows in sheltered spots and along illuminated woodland margins at many altitudes from sea-level to almost two thousand metres. Armenia is part of its fragmented Middle Eastern distribution that extends from Greece to the Caspian Sea, from the Crimea and the northern Black Sea coast to Israel and Jordan.



Crocus speciosus

Finally, there are pleasures other than our huge variety of flowers and bulbs. Enjoy Armenian apricots on your travels (photo: Fir0002 CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=121041>)



Gardening on a Postage Stamp

Maureen Wilson

Ten years ago I moved from Aberdeen to Linlithgow in Scotland's Central Belt. Widowed, I was unable alone to maintain the large garden that had been our labour of love for forty years to the same standard as previously. The painful decision to move was made easier by selling my home to my friends and fellow SRGC members, Helen and Bill McGregor.



My Linlithgow garden is an enclosed south-facing sun trap, measuring 10 m x 11 m. Everything going in or out of it must pass through the house. There are borders on three sides and a paved area next to the house – the rest is grass. After a couple of years I was becoming increasingly frustrated by the limited range of plants I could grow and decided to have the garden re-modelled to rectify this.



With the exception of one small bed that I made myself, I was not able to undertake the major alterations I had in mind. I contacted Carole Bainbridge's design company and, after putting our heads together, Carole drew up a plan and appointed a contractor to do the work.

Three raised beds were to be constructed in the area occupied by the grass, all of which was to come up and be replaced by large gravel. Two of the beds would be 90 cm high and one 60 cm high. A trellis would be erected along the side of the existing shed to screen it from the house, up which a climber could be planted. Three uninspiring



Cupressus in the eastern border had to remain not just because of the logistics of getting rid of them, but they also give shelter and privacy. For the same logistical reason, the ugly concrete patio had to remain although Carole suggested removing a small section to make the overall shape more interesting. The only area shady enough to grow woodland plants is in the south-western corner so a suitable bed would be created there. All this took place in May 2014.

The hard landscaping completed, the choice of plants and the planting was down to me. This was the fun part! Having a 40-year time-warped to clear out, I did not bring any plants with me from Aberdeen, but the McGregors were very generous and said I could put in a wish list for anything I desired; I certainly made use of this kind offer. I obtained other plants from specialist nurserymen at SRGC shows, the 50:50 sales tables, gifts from friends and even the occasional garden centre purchase. I also raised plants from the SRGC Seed Exchange, having by now installed a cold frame.





Pinus uncinata 'Grüne Welle'



Salix x boydii

To achieve a three-dimensional balance in the raised beds, a miniature tree was planted in each of the two larger ones. *Pinus uncinata* 'Grüne Welle' went into one, and *Salix x boydii* into the 'L' shaped bed. The overall aim was for a succession of colour through the growing season, starting with dwarf bulbs like *Narcissus cyclamineus*,

Saxifraga oppositifolia 'Theoden'





Genista tinctoria var. *alpestris*

N. bulbocodium and others. *Saxifraga oppositifolia* 'Theoden' has been very successful. It is pruned hard after flowering and fed to keep it compact and floriferous. Sub-shrubs included *Genista tinctoria* var. *alpestris* and *Salix hylematica*, both of which were planted to trail over the edge of the beds. They get pruned on the inner side to stop them from smothering other plants.



Narcissus cyclamineus in Spring



Gentiana acaulis 'Krumrey'

Some all-time favourites include *Gentiana acaulis* 'Krumrey' and *G. angustifolia* 'Pirin'. Both spread well and are very floriferous. *Potentilla nitida* spread so much that it was transferred to the gravel area where it continues to flourish. *Leucogenes leontopodium* 'Mignon' needs to be rejuvenated occasionally from cuttings as it eventually becomes straggly. *Campanula betulifolia* and *Edraianthus pumilio*, both raised from SRGC seed, have done particularly well.

Gentiana angustifolia 'Pirin'





Leucogenes leontopodium 'Mignon'

In the walk-in gravel area surrounding the beds several plants have been established. Rapid results were achieved from seed by going in for the 'cheap and cheerful' such as *Erinus alpinus*, the red form of *Anthyllis vulneraria*, *Linaria alpina*, prostrate *Thymus* species, and *Geranium nigrescens*, among others. The dark colour of the latter looks well contrasting with the gold-coloured stones. All seed around freely into this area, and any surplus are easily removed. A hole gets cut in the underlay

Campanula betulifolia





Edraianthus pumilio
Iris unguicularis 'Mary Barnard'



Trifids! But they help cover my broken slab space

to accommodate pot-grown plants including my *Celmisia semicordata*, *Ophiopogon nigrescens*, *Iris tenax* 'Broadleigh Rose' and *Iris unguicularis* 'Mary Barnard' AGM. I take shears to all the foliage of the latter when flowering is over as the dead and unsightly leaves are impossible to pull out. A subsequent feed makes up for the severed green leaves and it recovers well.

The bed that I mentioned above that I had constructed myself is in the patio area. One of the 3' x 2' concrete slabs was cracked so with help it was removed and the ground prepared for a small bed. This I planted with ground-cover plants to spread over the surrounding





Clematis alpina 'Pamela Jackman'

slabs to hide the ugliness. *Delospermum nubigenum* and the *Azorella trifurcata* have been so successful that earlier plants had to be rescued from these creeping trifids! The latter is now totally out of scale but is tolerated for achieving the purpose for which it was intended.

There are numerous small troughs spread around the open area and on the patio. Into these I have planted a range of smaller plants like *Sedum pilosum*, several encrusted saxifrages, and in a shadier trough the dwarf form of *Fritillaria camschatcensis* with *Pernettya pumilio* as underplanting.

Anything with height provides support for climbers – *Tropaeolum tricolor* and *T. speciosum* up the *Cupressus*, *Clematis alpina* 'Pamela Jackman' AGM up the trellis and *C. x 'Lunar Lass'* up the clothes pole around which netting was put for it to climb. *C. viticella* 'Etoile

Small troughs give variety on approaching the house





Dactylorhiza 'Harold Esslemont'

Violette' AGM adorns the fence on the west boundary. Scrambling as opposed to climbing plants are represented by *Asteranthera ovata* and a *Codonopsis* species.

The south-western corner can euphemistically be called a woodland garden! Apart from an even smaller area at the front of the house it is the only area consistently in shade. Shade for the back area is provided by the boundary fences, taller neighbours' hedges and an *Acer* tree that came with the garden. Slightly raised and rhomboid in shape,

Among the erythroniums

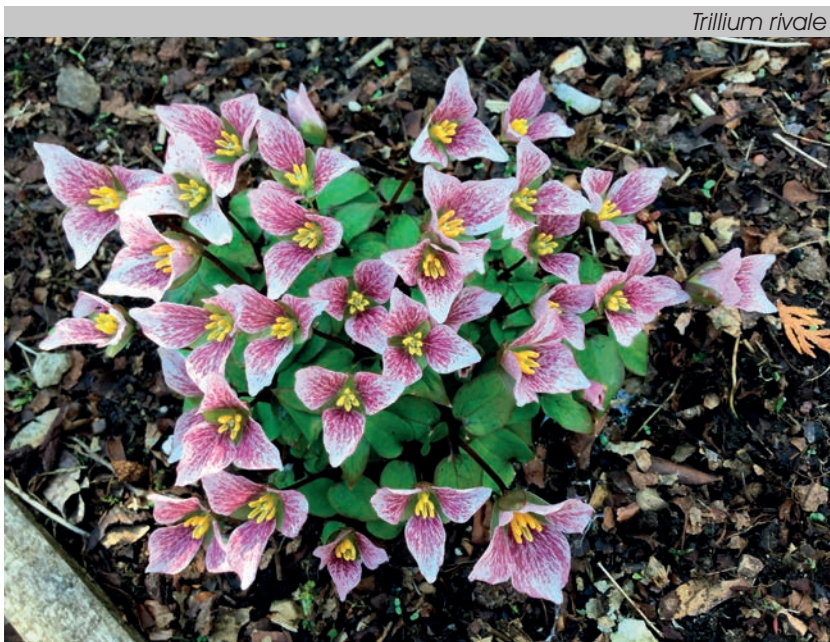




Trillium albidum, *Trillium erectum* and *Anemone nemorosa* 'Vestal'

it measures 2 metres across the front and 1.2 metres front to back. The mainstays of the planting are trilliums and erythroniums, with primulas, roscoeas, and *Dactylorhiza* 'Harold Esslemont' to give continuity of flowering.

Some of the trilliums and erythroniums arrived by way of a 'goody bag' from Aberdeen, the trilliums as one year old self-sown seedlings that had to be grown on to know which was which. *Trillium chloropetalum*, *T. albidum* and *T. ovatum* resulted from this source



Trillium rivale

whereas *T. erectum*, *T. grandiflorum* (both single and double forms), and *T. luteum* were purchased. A particular delight is my *T. rivale* in two colour forms – a gift from Cyril LaFong.

In the border extending from the woodland corner is planted *Camellia* x *williamsii* 'Brigadoon'. Here it gets no morning sun on the frosted flower buds, and the beauty of it is that the spent flowers do not hang there like wet tea bags but fall off and can be brought into the house and floated on water for further enjoyment.

The eastern border is very dry because of the presence of the conifer trees, so it is mainly occupied by bulbs. Snowdrops include *Galanthus elwesii* 'Fred's Giant', *G. plicatus* 'Wendy's Gold' and *G. plicatus* 'Sophie North'. *Fritillaria michailovskii*

Trillium ovatum

Primula sieboldii var. 'Alba'





Lilium pardalinum:
as a screen, & detail

and *F. pyrenaica* are in this bed, as are *Crocus chrysanthus* and others of indeterminate name.

There are bulbs in other beds also – *Crocus banaticus* in two colour forms and *C. sieberi* 'Tricolor' among others. The bed on the west side can accommodate plants which take up more space. A deep plum-coloured *Helleborus orientalis* hybrid,



Primula florindae

Lathyrus vernus 'Alboroseus' and *Cyclamen coum* are a few of the early subjects, with plants like *Corydalis elata* x *flexuosa* 'Heavenly Blue', *Trollius europaeus*, and a favourite small shrub – *Daphne cneorum* 'Eximia' to follow on. Tall subjects like *Lilium martagon* and *Lilium pardalinum* help to screen the fence. *Persicaria affinis* 'Donald Lowndes' is valued for its very long flowering season as is *Roscoea* x 'Kew Beauty'.

Primulas do exceptionally well and of the twenty six listed in my spread sheet, the enduring ones include *Primula vulgaris*, *P. veris*, *P. sieboldii* in two colour forms, *P. denticulata*, *P. japonica* – both the pink and the 'Miller's Crimson' forms, *P. pulverulenta* 'Bartley's Strain', and *P. florindae*. Some of them even self-sow into the gravel area.





Primula japonica 'Miller's Crimson'

Primula japonica



There is only room for one *Rhododendron*, so the chosen one has to provide more interest than short-lived flowers. *R. yakushimanum* 'Koichiro Wada' AGM ticks all the boxes in this respect. The new silvery foliage is particularly attractive and the indumentum on the underside of mature leaves is remarkably like the colour of milky coffee.

I grow many more plants besides those mentioned above and, as with all gardens, there are casualties which the philosophical gardener will regard as another planting opportunity. My biggest disappointment is being unable to grow *Meconopsis* species, especially as *M. betonicifolia* was



Rhododendron yakushimanum 'Koichira Wada'

our choicest weed in Aberdeen! I put it down to no organic matter having been put into the garden since the house was built in 1978, a situation I have been addressing in the last ten years with home-made compost. It falls far short of the same treatment over forty years in the Aberdeen garden where shade-loving plants thrived from such organic largesse.

Rhododendron yakushimanum 'Koichira Wada'





After 10 years, has it all been worth it? I weighed up the pros and cons before making the decision to move and I decided that the pros outweigh the cons. I have left behind friends, my home, the proximity of rural Aberdeenshire; I still get frustrated by the limited range of plants that I can grow. On the plus side, I now have a garden I can manage, new friends and interests, family close by and – last but not least – RBC Edinburgh is little more than a 20 minute train ride away and one in which I further indulge my passion.



An Essay from Argentina and Chile

Ger van den Beuken

In the five years since I finished organizing tours to South America, Mariet and I still remember and appreciate our good Argentinian friend, Marcela Ferreyra. The pain of parting from Patagonia has diminished but our urge to share the beauties and charms of this astonishing flora remains. This article is the fifth in our series that tries to compress some of our experience into the pages of our journal. Already halfway past the middle of our botanical alphabet, we continue our expedition here with accounts of species with the letters O to S. Choose some of these wonderful plants to try yourself.



Ourisia fragrans comes from the volcano and lake district in Argentina and Chile. The species is ten cm tall with pale pink flowers. It always grows in shady spots between big rocks at altitudes of two thousand metres or more. Propagation is from seed.



Ourisia microphylla is a cushion- or mat-forming species growing in dry vertical cliffs up to two thousand metres altitude. It is found from the Southern Andes to the lake district of Argentina. The flowers are pale pink and it is a very attractive species in cultivation, although only in clay pots in the alpine house. Propagation is successful from seed or cuttings.

Ourisia ruelloides is a plant totally different from all other species in its appearance, habitat and inflorescence. This remarkable plant with its tubular scarlet-red flowers grows in the shade near water streams. It may be found from Tierra del Fuego to the Central Andes up to 2200 metres. Propagation is from seed.



Oxalis adenophylla (See Front Cover) is frequently found in open rocky places above the tree line in Argentina and Chile. This abundant flowering bulb in pink to dark purple colours may be cultivated in the open rock garden, where it is possible but not easy. The alpine house is the most convenient place. Propagation is from seed or bulb division.



Oxalis chachahuensis is a rarity that we only saw once in Neuquén between gravel and rocks. The plant has deeply incised grey leaves and is approximately five cm high and twenty cm across. The flowers are creamy coloured. It was found at an altitude of 1500 metres. We know of no cultivation or propagation techniques.

Oxalis compacta forms cushions and grows from Santa Cruz to Mendoza in dry sandy steppe conditions at altitudes about a thousand metres. Its deep-yellow solitary flowers are stemless. Propagation is from seed.





Oxalis enneaphylla occurs in the Falkland Islands, Tierra del Fuego and further north to Santa Cruz about 1200 metres altitude. It is an awesome cushion-forming species with three cm flowers in shades from white to dark pink. This oxalis is the most common and widely distributed species in cultivation. The soil we use is a 90% mineral mix with the remainder a small amount of potting soil. The propagation is done by dividing the bulbs or from seeds.

Oxalis erythrorhiza is in my opinion the most beautiful species of South America. The most compact and rich flowering plants we have seen are between lava rocks on the Cerro Catedral near Bariloche in extreme weather conditions at an altitude of 2300 metres. Hard cushions form from silver grey rosettes with yellow solitary stemless flowers. I have no information about cultivation or propagation but it is probably from seed.





Oxalis laciniata is best admired in all its different forms at Stag River in the South of Patagonia. It reveals a range of colours from white to blue. This species grows mainly in a grassy habitat at an altitude of about 100 to 200 metres. Its cushions are more than thirty cm across and are formed by small rhizomes. Cultivation is not too difficult, if only in pots in the alpine house. I use a mix of fine garden peat, lava grit and pumice. The species is propagated by dividing the rhizomes, or growing from seed.

Oxalis laciniata* var. *pubescens is a variety with deeply divided silver-grey hairy leaves and solitary stemless pink flowers. This super plant is only found in one place on the Passo Roballos, 1800 metres high. The propagation methods are the same as *O. laciniata*.





Oxalis loricata is a cushion- or mat-forming species eight cm high in flower and fifteen to twenty cm across. The solitary white or pink flowers of the species are stemless. It is only rarely seen in deep scree conditions in the higher regions of Patagonia up to 1800 metres altitude. Providing the right climate makes it possible to grow this plant – but only in an alpine house or in covered raised beds. Propagation goes on by dividing the bulbs.





Oxalis nahuelhuapiensis forms mats or cushions with deep root systems, fifteen cm across and with yellow flowers ten cm high. This striking species occurs as steppe vegetation particularly in North Patagonia at an altitude of 2200 metres. Propagation is from seed.

Oxalis squamata is a species to avoid in the garden: it is impossible to keep its self-seeding habit under control. On the contrary, in Nature this plant is a gem. It grows to 3200 metres on rocky slopes in the Argentinian and Chilean Andes. The plant, including its purple flowers, is about ten cm high. Propagation is, as warned above, from seed.





Pachylaena atriplicifolia is a solitary rosette-forming species with ovate toothed leaves and stemless solitary flowers in pink, purple or yellow colours. The plant is endemic in the Central Andes on rocky slopes at altitudes of 4000 metres. Propagation should be possible from seed.

Perezia carthamoides is a species with deeply spined and toothed leaves fifteen cm tall and with white or pale blue bell-shaped solitary flowers on three cm stems. It grows on the central cordillera in Chile and Argentina above 3000 metres. Propagation is from seed.





Perezia pilifera forms small tufts up to eight cm high. The rosette forms from a tap root. The linear bristle-tipped leaves of this species are pointed at the edge. The solitary and almost stemless flowers are white, pink or pale blue. The large distribution area extends from Tierra del Fuego to the Northern Andes of Argentina and Chile. It grows in exposed rocky and sandy habitats to 4000 metres high. Propagation is from seed.

Perezia recurvata is cushion- or mat-forming, about fifteen cm high with elongated leaves four cm long. The blue or white inflorescence is solitary and approximately three cm tall. It is distributed from Tierra del Fuego to the Central Andes of Argentina and Chile at altitudes above 3000 metres in sheltered moister habitats. Propagation is from seed and cuttings are fairly easy to root. The alpine greenhouse is the best place to cultivate it.





Polygala salasiana has beautiful mats with small linear spatulate leaves a few centimetres high, more than fifty centimetres across. The small white flowers also have an intense blue colouration. This species grows from Tierra del Fuego to the Patagonian Andes at 2500 metres in steppe communities. Propagation is from seed.

Primula magellanica is a species with spatulate serrated leaves, occasionally farinosed, ten cm tall with white flowers on ten cm stems. The species is endemic in the Falklands and Tierra del Fuego through to Patagonia, occurring in wet conditions from sea level to about 1000 metres. It is possible to grow this primula in a shady part of the rock garden. Propagation is from seed.



Ranunculus semiverticillatus surely is one of the most rewarding and choicest scree plants in the world. It is a tufted perennial about twelve cm high when in flower, with glaucous dissected leaves seven cm across growing from a deep root stock. The flower stems are deep purple and the flowers are five or more cm across with purple sepals and white petals. This plant is found from the southern lake district to North Patagonia in bare mobile scree associated with the snow melt zone up to 2400 metres. Propagation is from seed.




Rhodophiala andicola is a bulbous plant endemic in the volcanic area of Araucaria and Northern Patagonia, where it grows in lava sand at altitudes of more than 2000 metres. The leaves are up to thirty cm tall and the solitary bell-shaped deep pink flowers form on 20 cm long stems. Propagation is from seed.





Rhodophiala rhodolirion comes from Chile and Argentina in open steppe communities growing in dry bare soils to 3500 metres. The species has fifteen cm leaves that usually appear after flowering. The deep pink flowers are eight cm across on twenty cm stems. Propagation is from seed.



In Perito Moreno National Park

Saxifraga magellanica makes part of the subsection Saxifragaceae. It is one of few species from South America and is endemic from Peru to the South in Tierra del Fuego. We have seen it in different biotopes. In the Parque Nacional Perito Moreno it was growing on massive rock but in Tierra del Fuego we found it in a fairly wet area and completely different in appearance. The white flowers are often stemless on the cushion but can be different and longer in other places. The plant is in cultivation, best in pots in the alpine house and propagated from seeds.



East Asian Pulsatillas in a Scottish Garden

Cyril Lafong

The Eastern Asian pulsatillas, *P. ajanensis*, *P. integrifolia*, *P. nipponica*, *P. sugawarai*, *P. taraoi* and *P. tatewakii* are fascinating plants from Japan, the neighbouring island of Sakhalin and the Siberian mainland to the West. They are little known in the West with only *P. tatewakii* occasionally encountered in gardens.

The rarest, and barely in cultivation except perhaps in its native Japan, is *P. nipponica*, which is confined to the islands of Hokkaido, Honshu and Rishiri. It has deeply divided leaves and pale yellow campanulate flowers with silky white hairs outside. It is reported to be difficult and short-lived in cultivation.

P. taraoi, a rare species native to South Kuril Island, is called *The Phantom Pulsatilla* in Japan. It is very distinct in the Eastern Asian group, with striking star-shaped sessile cream flowers and shaggy white hairs on the undersides of the petals (more correctly sepals). My plants produce flowers with ten to twelve petals that usually appear before the

Pulsatilla taraoi flower appearing before the leaves



leaves but occasionally a flower will appear with them. The leaves are very finely dissected but the plants are herbaceous, with the leaves disappearing completely during dormancy. I received plants from the Japanese nursery, Yuzawa Engei, in 2014 and they are grown in pots using a free-draining acid compost consisting of kanuma, ericaceous compost, loam and lime free grit. Kanuma is not the therapeutic medicine, but a volcanic growing medium used in Japan for growing satsuki azaleas – their fine roots penetrate the grains in search of moisture. My plants have not yet set seeds and they have only produced a couple of flowers so far. I have been hesitant to grow them in the garden because of their scarcity but they may well perform better outdoors.



Pulsatilla tatewakii, *P. sugawarai* and *P. ajanensis* are very similar in general appearance, with nodding, campanulate, soft to mid violet or lilac purple flowers. *P. tatewakii* is usually taller (ten to fifteen cm) than

Pulsatilla taraoui: flower with leaves

Above: seedlings





Pulsatilla tatewakii

P. ajanensis and *P. sugawarai* (six to twelve cm). I am currently growing *P. tatewakii* from seeds from the SRGC seed exchange sown in 2016. They germinated in spring 2017. So far, plants have been grown in pots producing only a few flowers but last year I planted one in the garden where it seems happy so far and will hopefully flower better. I have seen

Pulsatilla tatewakii leaves in the garden



photographs of plants grown outside and flowering well in Norway with one exceptional plant bearing over thirty flowers. It is the only species whose seeds are sometimes available in the AGS or SRGC seed exchanges, probably donated by these successful Norwegian growers.

I grew *Pulsatilla ajanensis* from seeds received in 2014. The field notes stated, '*P. ajanensis*, Russia, Talakan, Amur Oblast, rock facing south, 175 m. The species does not grow this far south but the seeds had been transported by the river'. A few plants remained from the initial germination and, so far, two plants have survived in the garden with one growing and flowering well and setting good seeds last year. Seeds sown fresh in June last year germinated well in August but have not been pricked out because individual seedlings struggle to survive during the winter dormant period. Instead, the seedlings were potted *en masse* in a bigger pot and will be pricked out this spring (2022) when they should establish better with the longer growing season ahead.

I obtained plants of *P. sugawarai* from the same Japanese nursery in 2014. Initially they were grown in pots using the same acidic compost and they flowered sparsely, usually in the autumn. The plant was self-fertile but only produced very few seeds. Cross pollination among flowers from different plants yields more seeds which if sown fresh usually germinate in about six to eight weeks. The resulting seedlings seem to adapt better to conditions in my garden and to flower at the normal time, in spring to early summer. The plant shown here is grown from my own seeds sown in autumn 2016 that germinated in spring 2017. It grows in full sun on a raised bed and flowered well for the first time in May last year, setting some good seeds. Seedlings have been treated the same way as for *P. ajanensis*.

Pulsatilla sugawarai in seed

Overleaf: *Pulsatilla sugawarai* in flower 🍁









Pulsatilla ajanensis

Pulsatilla integrifolia (formerly *Miyakea integrifolia*) is restricted to eastern Sakhalin and has leaves that are entire or almost entire (some are occasionally bilobed or trilobed), very different to other pulsatillas. It is also evergreen, an unusual characteristic of the genus, which it shares with the European *P. vernalis*. The two will hybridise in cultivation. I have two three-year old plants that are grown in the same acid compost in a clay pot plunged in sand in a large greenhouse but neither has flowered yet. Last year one plant had two promising flower buds that failed to develop properly and aborted. This tendency with autumn-forming buds is a common feature of the plant, with many growers reporting the same problem. Mid-Scotland has a temperate maritime climate, generally with cool summers, mild winters and rainfall spread throughout the year. This is somewhat similar to the climate of the plant's native habitats. However, climate change is underway and it is not often we get reliable snow cover followed by a prolonged cold spring – conditions that seem necessary for the plants to flower well. Even in Sweden growers are now finding it difficult to get their plants to flower and set seeds, but in Norway flowering has been more reliable. In view of their scarcity, I have been reluctant to grow plants in the garden although I am sure this is the best place for them. Seeds are very rarely available but germinate well if sown fresh. *Pulsatilla integrifolia* (and many other pulsatillas) may be propagated from rosette cuttings and this would be a way to increase stocks for trying outdoors.



Pulsatilla integrifolia in leaf

All these species are rare in cultivation and successful records usually come from countries where the plants originate, and in countries with similar, cooler northerly latitudes. Lack of available viable seeds or young plants accounts for their scarcity. However, it is worth searching around, as last year I spotted some strong growing plants of *P. tatewakii* in pots in a garden, obtained from a Scottish nursery. My experience so far is that plants do better if grown in the garden where the free root run and the cooler temperatures seem to encourage them to flower well and to set seeds. I will be brave this year and plant *P. taraoi* and *P. integrifolia* on a raised bed outside. Growers in warmer climates should not despair as I know at least one grower in Germany where the summers are hot (occasionally over 30°C) who grows and flowers *P. ajanensis*. Hopefully, my writing this article will encourage more people to try growing these appealing plants.



Pulsatilla integrifolia showing aborted flower buds



New Beginnings: Utrecht Botanic Garden

Connor Smith

(🌈Photos ©Wiert Neumann)

I feel closer to horticulture than ever; it has been a solace from the challenges and difficulties of recent times. Nature takes you away from it all – albeit temporarily – but momentary absence in a greener greater place is essential. Change always comes at a price and you will not be at ease in new surroundings until you have forgotten a bit about the old ones. Gardens are always in constant flux, changing with the seasons, our new dreams and aspirations. Trying to understand a new garden is daunting; a blend of nerves for the work before you and uncontrollable anticipation for the fresh canvas on which you are to paint.

Having exchanged the windy hills of Edinburgh for the winding canals of Utrecht, I am quickly adjusting to my new conditions within Utrecht Botanic Garden (UBG). You may not be as familiar with it as others in Europe, although it holds one of the largest European rock gardens, at 2 hectares (almost 5 acres). It is a treasure trove of rock gardening pleasures.

The Netherlands (Holland is just a part) is a flat region with its highest point only 323 metres over sea level. The climate is maritime but in some years is continental (extremes of 38°C and -10°C in 2020). Rainfall is like Edinburgh at 800 mm per year. Over 2100 tonnes of rock were imported from Belgium to build the geographically constructed areas between 1967 to 1976. Alpine troughs were subsequently constructed, with raised beds

Above: Early days in the Dutch Rock Garden

Below: Original construction of the 14 metre high centre of garden





The old rock garden showing the European beds with focal point conifers

and later the peat walls. In 1995, the alpine house was built and focussed on plants of the time – notably Primulaceae, which was then vigorously studied by many botanic gardens.

The garden has always been a space to experiment. Wiert Nieuman used reclaimed concrete for low-cost creation of retaining walls, crevice gardens and *living walls*. This method has grown in popularity with the new 'Urbanite' trend, as high profile gardens made such rock and crevice features. While I prefer natural rock, I admire the innovation and ingenuity used to expand methods of alpine growing.

There is no better example of new methods than the UBG spheres: they were built in 1995-1996 and are about 1.5 to 2 metres high (see Wiert Nieuman's article in *Sibbaldia* No. 5). They combine perfectly the required diverse habitats while providing a unique aesthetic that is easy on the eye. While ferns, *Ramonda* and *Haberlea rhodopensis* grow on the lower and shadier parts, *Daphne arbuscula*, *Saxifraga*, *Draba*, *Asperula*, *Primula allionii* and *Minuartia stellata* greet visitors as they enter. An old photo showed clustered planting with hand-sized specimens clinging on. They were *Dionysia*, which are seldom grown outside, more often planted successfully in tufa in a glasshouse, such as in Gothenburg and Tübingen.

The Living Walls: the trough has now been planted with carnivorous plants





A sphere in construction




Unfortunately, the dionysias are susceptible to pests such as aphids and require a good air flow, otherwise they deteriorate. *Dionysia aretioides* and *Dionysia tapetodes* are the species best equipped for growing outside because they tolerate water better, while many of the others simply die off if watered from overhead. Plants on the spheres may have persisted 3 to 5 years and most fatalities were because they got too heavy, often after heavy rain, and broke off. Cuttings were then used to replace the lost plants.

We are now in the second coming of the stone age. An invigorated approach has gripped rock gardeners. I am far from qualified but offer a few pieces of personal advice from experiences, conversations, observations and travels. Establishing plants often challenges us with problem spots that are too wet or dry. After years, or if the soil is not properly packed, soil spaces are lost, meaning that the plants run out of growing medium. Although smaller plants are easier to fit into gaps, they dry out faster so can be a greater challenge to establish in warm weather, but once established


A finished sphere planted with its dionysias and other plants





 *Armeria 'Drake's Dark Form'* decorates a sphere the growing roots anchor themselves. Larger plants are more challenging. While trying to establish species on a tufa wall, Sue Simpson in the West of Scotland has used small straws inserted with the plants, to funnel water directly to the roots.

Global warming may occasionally express more in cities than in the countryside, but why? If you ever walked bare-foot on concrete on a hot day you may have made funny noises. My point is that concrete heats up in the summer; but it does not retain heat in the winter and cools rapidly. Jeremy Schmidt discussed this (*The Rock Garden Quarterly*, Spring 2019, p149); with sphere temperatures up to 3°C colder than the upper levels of soil it is wise to select tough cold-hardy plants. The spheres are also prone to drying out so drought-tolerant species are needed. Individual water systems are installed in each sphere, with a small sprinkler at the top. A second pipe in the larger sphere soaks the shady side, keeping ferns from drying out and keeping them cool.

 The cultivar bed and rock garden in summer



The Southern Hemisphere

Southern hemisphere plants are a challenge in northern climates. However, our current bed has been such a success that we are expanding it into the old cultivar beds. Although cultivars are important, UBC focuses on conservation, education, and research. Therefore, expanding the collection of hardy species from alpine areas like Chile, South Africa and New Zealand will be a good opportunity for our students to see the diversity within species not commonly grown outside here. Gondwanaland was the super-continent containing South America, Africa and India around 300 million years ago. Today, we can see plant species and families that are found on all three continents. For example, a *Nothofagus* is currently planted in our southern hemisphere bed. Although this species is Chilean, others are found in New Zealand. By showing both species together we may explain things like evolution, ecology and distribution.

Unrelated genera have evolved independently on opposite sides of the world and some have adapted the same morphological characteristics to survive. This allows us to expand our teaching to students and visitors. Many of us are familiar with *Fuchsia* in our gardens or in shops. Mostly cultivars of *F. magellanica*, they are South American species pollinated by hummingbirds. Fewer people know of the three

The African crevice section on my first anniversary in the Netherlands





All stones are removed, soil moved into position, large rocks being placed

New Zealand species, or of their vivid blue pollen that catches our eyes and those of the limited species of birds that pollinate them. Genera (or families) may be found on all three continents, such as the obvious Asteraceae, Rosaceae and Fabaceae. We sometimes erroneously think of some genera as coming from one continent. For example, the giant South American *Gunnera* comes to mind rather than the small new Zealanders or the tough African *Gunnera perpens* – which should be grown more often.

My wish list always grows but one species is high on it: far from the most attractive, it is one of the most interesting. Watching a polar bear filmed in the whiteness of the Arctic, you might think nothing grows near the poles. But while the land is home to mosses underneath the ice, it has flowering plants above surface – a grass (*Deschampsia antarctica*) and an alpine (*Colobanthus quitensis*). *C. quitensis* is native to Antarctica and southern Mexico down to Chile and Argentina, giving us hope of growing it. A low-growing cushion similar to *Silene*, it is adapted to high light levels and has a relationship with endophytic fungi. Tromsø Botanic Garden has an excellent Facebook video detailing its cultivation and ecology.

Rocks selected here are sandstone, fitting southern hemisphere species and giving desert feeling. It is closer in appearance to the metamorphic rocks (gneiss, quartzite and schist) seen in southern Africa – whence I took much inspiration. We remove soil and roots, and place large rocks in pivotal positions. The area is split into three: South America is mostly full sun apart from the wetter lower section; the African set is in the centre on a gradient; and the area closest to visitors will be split into horizontal rock work with overhangs for more succulent species. The upper part forms the dry roof to the front of the bed and slopes down to the water with richer soil and a greater density of clay. The gradient

imitates a mountain and is particularly important for the southern African flora, as many plants grow well in wet conditions, such as *Wachendorfia*, *Watsonia* and *Crocasmia*. The Oceania section on the corner is larger, covered by *Alianthus* and *Prunus* to provide shade to many New Zealand plants. Each zone will get a crevice garden for its trickier species.

Geographical areas of the rock garden

Beyond the entrance, the spheres and the new southern hemisphere are another 300 or so plants in troughs and raised beds to greet you. The next area geographically is North America. This section is mostly in full sun with only a small section in shade. It is home to two national collections of *Penstemon* and *Eriogonum*, the former being a difficult genus. It hosts around 250 species all found in America. *Penstemon frutescens* has been moved into *Pennellianthus frutescens*, and it is closer related to genera like *Keckiella*, *Collinsia*, *Nothochelone* and *Chelone*. The Western American species from areas such as Oregon, Washington and even California to Mexico do well as they are adapted to the rain, whereas species from states like Utah tend to require drier conditions than we can provide in the open garden. The winter months are challenging, and we take cuttings of newly planted or short-lived species (at least in the garden). The clay soil also contributes to reduced life expectancy.

Eriogonum is a taxonomic mire for me, painfully difficult to identify to species level. A personal favourite is the tumbleweed-like *Eriogonum rixfordii*. The genus is characteristic and easy to spot flowing over rocks. There is a high level of endemism throughout its distribution, often various in appearance but growing in diverse conditions like ultramafic soil or highly isolated mountains.

One of my favourites in woodlands is to listen to the noise of the swaying trees in high winds. The Asian section is largely woodland. In early spring as the weather changes the first green shoots come with new seedlings (good and bad) and the warming of the soil. The thick mulch begins to break down as plants orchestrate the ceremony. Some are always on time while others go with the season.

Europe and Balkans

Europe is the largest part of the rock garden with areas from full sun to shade and deep soil. I am guilty of thinking that our native flora is not as interesting as that of the Himalaya, Andes or Rocky Mountains. But, when you learn of the mountains of Montenegro, the chasmophytes of Greece and the vast flora of Turkey you learn to better appreciate what you have closer by.

Peat walls

Gardening with peat was originally developed in tandem with the influx of plants coming in from China with the aid of plant hunters in the 1900s. The new ranges of species such as *Rhododendron*, *Meconopsis* and *Primula* required specific care and peat was selected for its acidity, water

retention and nutrient content. Today, we look through new eyes and are more conscious than the horticulturists before us. Peat is not sustainable and is quickly disappearing from the world. Its formation takes years and alternatives must be found. Unfortunately, there is no equal replacement, although we are working to find one. UBG now only uses peat to build the walls.

Stinzenplanten

History is written by the victors. This has been immortalised in print, a product of historical revisionism and the blurring of lines between truth and propaganda. Plants' native boundaries have been subject to continual questioning: plants do not see borders and they spread freely as long as the conditions are hospitable. We too have aided the spread: Romans brought medical plants that naturalised; *Larix* was brought to Britain for timber production in the 1800s (classified as archaeophyte or neophyte, and could now be classed as native); and gardeners with their keen eyes for new leaves, blooms, fruits and shoots have played their part too. Although we have made some notable mistakes, the vast majority of introductions have been successful, some conquering new lands and making new homes in the hearts of gardeners and nature lovers.

Dutch *stinzenplanten* are plants introduced many years ago to the point when they are now considered naturalised. Typically, they are spring-flowering, often bulbs and corms found in eastern or southern Europe and western Asia. Broadly defined as woodland species, although some would be better described as alpine, many *stinzenplanten* are found in churchyards, old manor house grounds and estates – the provinces of northern Holland, Groningen and Friesland are arguably the finest, with the most iconic being *Galanthus*, *Crocus*, *Narcissus* and *Corydalis*.

UBG has developed a *stinzenhelling* (a slope of naturalized species with tree cover in the summer) in just under thirty years. Seed came from various populations throughout the country. Despite being 'common', these populations exhibit a wide spectrum of genetic diversity owing to wide-ranging geographic distributions. This, with the mixing of different estate populations, creates a tapestry of colours, forms, and habits. The Dutch *Galanthus nivalis* comes in two distinct forms: the first shows typical small leaves and short stature; the larger 'French clumping form' is considerably larger and clumps quicker and for that reason it was introduced into the Dutch trade. *Galanthus elwesii* is present as a mix with *plicatus* blood in it. The crocus come in classic colours including a charming light pink to red form, as well as wine stain venation. Some clump up readily while others persist in single forms. This beautifully illustrates the range of genetic and phenotypic (how one looks) expressions within a species both historically and geographically, all made in less than an acre and achieved in less than thirty years.

Alpine glasshouse Renovation

We are renovating our glasshouse at UBG. We do it step by step and I would like here to illustrate how we changed and remodelled the plants, rock work and overall design.



The alpine glasshouse in full flower in summer 2021 including the renovated external area from winter 2020 and spring 2021. Rock work has been rebuilt and new plants such as *Saxifraga* and *Sempervivum* species grow in the sunny exposure, with *Androsace* and *Ramonda* on the shadier side. The glasshouse at this time contained large specimens of *Acantholimon*, *Sedum* and a few other genera (about 20 in total). The soil was tired and compacted and many plants had grown too large for the area. It was last reconstructed in the 2003/4 season.



The front foundation, showing the extension made some years ago. The upper layer of the soil has been removed as well as all the plants. The metal beams of the glasshouse are painted to a mellow grey because the previous blue was a bit garish. Many of the stones have been removed, apart from the largest – to save our backs.



This *Artemisia tridentata* came to us in long ago in 1999 and was at time of its removal pushing hard on the glass. The hose in the picture is a drip line connected to an automatic water pump. This system is turned off for the winter and runs at other times for twenty or thirty minutes (depending on the weather) a few times a week. Care has to be taken: here are Marco and Marloes in action placing the root ball in perfect orientation for its site.

This is where I have failed, with no photos to show of other parts of the process. While the first two layers contain tighter rock work for smaller species, the back terraces are built with larger rocks and a bit more space for bigger species.

The first wall has been made of a porous mix with planting holes for smaller plants. This is the first terrace with the second wall being made just by the black pipe.





Planting, arranging pots to try and to get the correct height, spacing and area of each plant. The drip irrigation is placed in a circle in the second and third terraces with no irrigation at the top as it will get rain, although the part by the wall will stay very dry. We have selected and planted succulents. The first part is done and – yes, I am trying a *Begonia* in a rock garden. There are many hardy species out there, this one from the Mexican mountains.

The upper part planted with larger specimens. Here is *Plantago arborescens*, and *Veronica perfoliata* from Australia can grow outside but I hope to get better flowering and colour inside. In the home to one of the world's largest Bromeliad collections I was curious to test some species inside the glasshouse. This *Tillandsia* is a test subject selected by our Bromeliad taxonomist, as is the *Aechmea* closest to the glass. As for the rest, I am hoping that the succulent *Bursera fragilis* from California and Arizona (Burseraceae, or Frankincense and Myrrh Family) is hardy if kept bone-dry in winter.





In previous times we didn't have a path to get into the house and just had to watch the plants carefully. I wanted a good path but also a plant-friendly one. I was inspired by a photo from Tübingen Botanic Garden, where they had made a path with long strips of stone curved into the planting scheme. I wanted to create the same with small stones in the same direction as the crevice work outside. The gaps between the stonework are designed to allow seedlings to grow, whether planted or self-seeded. I would also like to get some species to grow in the path such as *Thymus*, *Origanum*, *Corydalis* and *Cymbalaria*.

Finished, the alpine glasshouse has been rebuilt. The previous rebuild was carried out in 2005. I am hoping it will be able to last as long as this and we are able to continuously add additional treasures. It contains 54% wild-collected plant material.





Seed germination and cuttings have been successful this year and are often the things that people ask advice on. These are always themes I find poorly explained, with either too general information or skimmed over as not important. I will try and explain the method we use in some detail. It is principally the same method and soil is used for all seed, with minor adjustments based on specific genera according to their form, seed coat (hard

coats can be soaked or scratched), growing conditions (acid loving or alkaline dwelling), age (soaking in water) and method of dispersal. I am a strong believer that the seed tells you how it grows: if it is wind dispersed it is surface-sown; the presence of an elaiosome (attached fleshy structure) means that it should be sown deep in the pot as the ants do. We label our seed pots with accession numbers, storing all the information in our database. QR codes on the labels allow us to scan the number and update the database about germination and planting.

Small seven cm pots use little space and allow for the maximum range of species. A fingernail depth of grit is added to the bottom. The soil mix depends on your climate and watering regime. I prefer something light, which is 2:1 compost to bimps (a perlite like substance). The depths of the seeds differ, depending on the species. Broadly speaking, bulbs are planted at about half pot depth, and others (wind dispersed bulb seeds are sown higher) closer to the top are covered with a thin layer of soil. Press a spare seed pot on the back of the soil and then top dress with grit. It is worth noting that a thin layer of vermiculite may be advantageous as a bed for the seeds. I personally have done this, and it helps the seed stay moist; it may be essential for those in warmer climates who lack time, or for moisture-loving plants. Pots are then put in a watered tray for about a day, so the seed can imbibe. I think this is essential for older or dry stored seed. Avoid freezing conditions when in water as the seed may be damaged. They are then placed in a polytunnel and watered around once per week, increasing to twice weekly in early spring, depending on weather. A polytunnel is not strictly necessary: a cold frame, glasshouse or north-facing spot will do. However, this makes you think more about the soil medium, as exposed pots react differently to those in a glasshouse. Regrettably, mice and birds are fond of seeds and are deceptively good plantsmen, always finding the rare, unusual and prized ones the most tasty. In accord with old traditions, if snow appears, brave the cold and shovel a healthy layer of it onto the pots to persuade them they are in the mountains. Whether this actually works may be contested, but it does produce an odd placebo affect later when you recline on the couch.

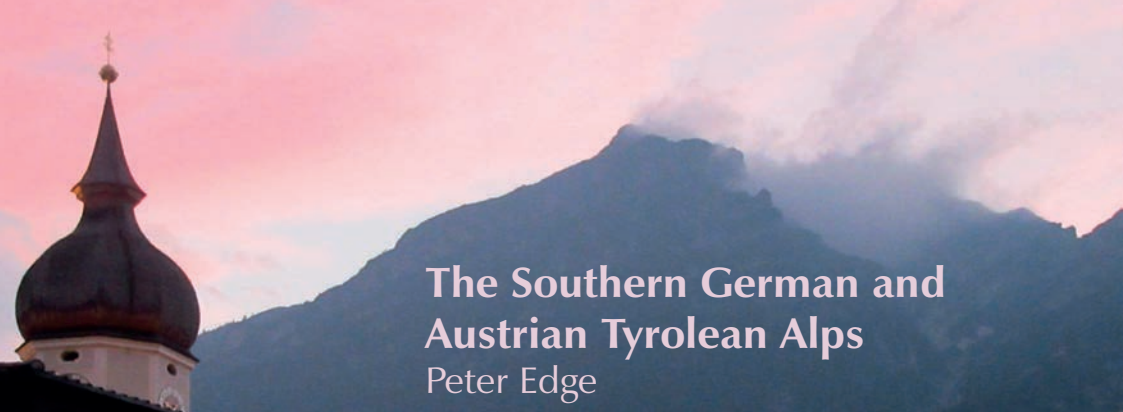
After germination the seed pots go into the nursery under lights and a heater set around 10°C. Densely sown seed or small seedlings like *Campanula* are split into large sections and potted on in clumps to keep the plants going and then properly pricked out when larger. I prioritise larger growing species and pots sown years beforehand in order to refresh the compost quickly and provide new energy for the seedlings. I have always used a small part of the old compost in the new mix, believing that some mycorrhizal associations may have established and would aid the plants' growth. Whenever I pot on seedlings or young plants, I always keep them in the propagation room to baby them into the next stage, the equivalent being a north-facing corner of the garden in which to rest. Plants are arranged geographically in the polytunnel to help with planting and are arranged by life cycle, with bulbs and corms needing less water in the winter.



Cuttings are predominantly taken in early winter when the garden calendar allows. The process for seed generally applies to cuttings. Taking cuttings in the morning (not when freezing) is always best practice. With cushion plants, sacrifice one plant by sawing an inch below the cushion. Brush off the extra soil and make mini-divisions of the cushion, splitting the plants into cuttings the size of your thumb. In my experience, these cuttings are far easier to look after and to root than single rosette cuttings. Larger plants establish quicker and shelf space is saved. As a botanic garden, we need to have the highest range of diversity as possible, so only require a few plants of each accession to make it into the garden. Regarding *Acantholimon* propagation, an in-depth description of my trials and tribulations is available from NARGS, and alpine summer seed sowing is described on the AGS website.

The shade tunnel is mostly used for the herbaceous woodland species and ferns to let them bulk up before planting out. It is also used to store plants when we are redoing areas of the garden such as the peat walls. The soil has a base of sand and then general compost which prevents the plants from rotting. It is shaded by a canopy of oaks and hazel as well as shade netting. We grow some tree seeds in terracotta pots or trays sunk into the ground to germinate. Additionally, just behind, we have a range of snowdrops as part of a research project to find out where the 'Dutch' snowdrop comes from: there seem to be different forms, origins and collections. We have also curated a range of accessions of wild (if classed as more than 150 years) *Galanthus nivalis* from a range of locations.

Thank you for reading this article. Please visit the garden one day in the future. See <https://www.uu.nl/en/utrecht-university-botanic-gardens>



The Southern German and Austrian Tyrolean Alps

Peter Edge

In 2017, we had a week of bonus holiday that would accommodate a mountain-plant adventure somewhere. We looked for a place accessible, straightforward to organise, yet which still offered that thrill of discovering new places and plants in the wild. 'We' were plant travelling friends from a previous visit to China, namely Stella & David Rankin, Ngaire Burston, Graham Gunn and I. Our chosen destination was the Tyrolean Alps: Austria and – to start with – southern Germany. After we had met and exchanged greetings it felt wonderful to be at the start of the mountains surrounded by the culture of a new country. We ate rich food, listened to trumpet and accordion music, surrounded by locals in lederhosen. The setting sun made a warm glow on the steep crags, peaks and distant valleys that we would soon be exploring, promising us glorious days of discovering mountains and plants.

Campanula cochlearifolia



Aquilegia atrata



... We woke next day to rain. However, during our walk up to the Schachen Alpine Garden we identified many marvellous plants new to us. Growing out of damp limestone, *Saxifraga mutata* bore prominent orange flowers, and we passed the apparently delicate *Campanula cochlearifolia* (fairy's thimble) and *Platanthera chlorantha* (the greater butterfly orchid). Above these in the high boggy meadows were *Ranunculus aconitifolius* (aconite leaf buttercup), *Phyteuma orbiculare* (round-headed rampion) – the first time I had seen this in the wild – and *Anemone narcissiflora* (the narcissus anemone). Some rather lovely black alpine salamanders watched us pass. Further up in scree were *Silene alpestris*, *Androsace obtusifolia*, *Dryas octopetala* and a strikingly dark *Aquilegia atrata*. By now we had arrived at Schachen Alpine Garden, a satellite of Munich Botanic Garden. Tidy and well-kept, eight hundred alpine species from around the world grow here, many of them rare and unusual. Highlights for me were *Primula involucrata* and *Adonis pyrenaica*. I highly recommend visiting this garden and exploring the hiking trails around the region.

We returned to our hire car, slightly wet but refreshed, having enjoyed a great first day. We had seen many new plants and I am grateful to my companions for their help in identification here and elsewhere. Graham had done much of the organising for our route and had arranged a mix of different places and plant habitats within a short

Adonis pyrenaica





Primula minima

distance of each other. Our next area to explore was Hintertux in the Austrian Alps where our major planned hike was part of the Peter Habeler Runde. This is a high alpine circuit threading through six alpine huts around the Olperer mountain; it takes around a week to complete. Peter Habeler himself was born in Mayrhofen and made alpine history in 1978 when he and Reinhold Messner climbed Mount Everest without carrying any artificial oxygen. We started with a cable car to gain immediate height. I'm always impressed with the fun of cable cars and mountain trains but, more importantly, they make Alpine montane environments and plants accessible to all abilities and mobilities. Mountain paths are well laid out and vary from being easy to more challenging and exploratory, and are usually well marked. Our first day's walk was to be six hours and we made time to enjoy a glorious crisp valley view over tea and apple cake – while a marmot tried to break into a ski hut shed.

Soldanella pusilla emerging near the snowline





Phyteuma scorzonerifolium & *Lilium martagon*

I learnt that the best time to see flowers in the Alps is when the snow melts; then they burst into flower. We were visiting in June, a perfect time for this melting and most obviously illustrated with *Soldanella pusilla*, the alpine snowbell, which completes its flowering cycle even within days. As soon as the snow thins, its flowers break through in scatterings of delicate purple bells. In patches where the snow had recently melted the plants were already in seed. At this plateau we found meadows of *Primula glutinosa* with *Primula minima* flat against rocks and a hybrid of the two nearby.

Although the walk was well sign-posted it was dramatic and a bit scary at times, taking us down narrow cliff paths with only slim hand ropes. On the positive side, cliffs mean rocks. Therefore, wonderful plants such as *Sempervivum montanum*, *Astragalus leontinus*, *Pedicularis rostratocapitata*, *Gentiana verna*, *Geum reptans* (the creeping avens) and of course the Austrian national flower *Leontopodium alpinum* (the Edelweiss) were all excitedly discovered. Hours later, over yet another

Sempervivum montanum



Right, From top to bottom:
Pedicularis rostratocapita,
Anthyllis vulneraria and
Gentiana verna were some
beautiful compensations
for our descent of rather
scary narrow paths on
the high-level Peter
Habeler Runde hike



ridge and into the last valley, the Geraer Hütte twinkled into view. Huts offer good value basic hostel accommodation with showers, delicious home cooked food and, lacking road access, nocturnal darkness and blissful isolation from the world. Our feet would have a chance to rest and prepare for the seven-hour walk the next day.

A bright morning, and the next hut stood only 300 metres above us. Unfortunately, to circumnavigate the intervening ridge involved descending 1200 metres and then reascending 1500 metres during a very long walk. Beauty surrounded us that day with giant cascades, cliffs, forests and scree slopes. The path descended through coniferous woodland that sheltered many species: *Lilium martagon*, *Phyteuma scorzonerifolium* (scorzoneraleaved rampion), *Thalictrum aquilegifolium* and *Digitalis grandiflora* were just some. It then released into lush meadows full of familiar and unusual species, including *Gentiana utriculosa*, *Campanula barbata* (the bearded bellflower), *Neotinea ustulata* (the well named burnt orchid), *Silene nutans* (catchfly), *Salvia verticillata* and the bizarre-looking parasitic *Orobanche alba* (the thyme broomrape).

Meadow collage, Left to Right: *Campanula barbata*, *Neotinea ustulata*, *Silene nutans*, *Orobanche alba*, *Gentiana utriculosa* and *Salvia verticillata*





Landshuter Europa-hütte
Androsace alpina



Pedicularis tuberosa

After welcome coffee we reascended the next valley, by a stream where a local man was eccentrically constructing a small mechanical waterwheel using cogs to make tapping music, and on through woods to a set of scree slopes. Here we came across cushion formers: *Silene acaulis* (moss campion), the sweet pink *Androsace alpina*, *Cerastium* species and *Saxifraga bryoides* (the mossy saxifrage). These created the most perfect alpine garden; one that I would aspire to create back home. Another slightly scary scramble up a narrow cliff path and a couple of hours of tough walking led us to the superbly remote Landshuter-Europa-hütte, perched on the rocky frontier between Austria and Italy. We arrived exhausted and delighted to have been acquainted with so many species.

Pedicularis recutita





Primula hirsuta

The next day, after tea and honey, we left for a three hour walk to the Pfitscherjochhaus. On a wet day the more or less level path enabled more leisurely walking. As on many previous days, we passed the ubiquitous but lovely *Rhododendron ferrugineum* (alpenrose) and *Loiseleuria procumbens* (alpine azalea), both familiar elements of the Alps. We also found two species of lousewort, dark-red *Pedicularis recutita* and pale-yellow *Pedicularis tuberosa* as well as *Gentiana alpina* (alpine gentian) and another primula, *Primula hirsuta*. Lunch followed, with views of Italian glaciers while marmots entertained us between the rocks. We identified a few more marvellous plants in the afternoon; hemiparasitic *Bartsia alpina*, *Ajuga pyramidalis*, *Saxifraga paniculata* and some lovely *Pseudorchis albida* (the tiny, small white orchid). They were all seen before we arrived to dry off and take stock.

The day after Pfitscherjochhaus we took the wrong route, one that would take us off the mountains! However, after returning to Mayrhofen and Hintertux, this was to fortuitously give us extra time in our next location. A valley about an hour and a half away, the Gschnitztal, offered us the most extraordinary plants we had yet seen ... it is at 900 metres and offers a walk to a most friendly mountain hut, the Blaserhütte, where we stayed for the night. If looking for an area to explore specifically for plants, then here is highly recommended.

Saxifraga paniculata



Gentiana alpina





Haystacks in the Gschnitztal

On this walk sparse conifer forest opens up to traditionally managed Alpine hay meadows and the plant species are accordingly diverse. We identified at least twelve species of orchid. Even within a hundred metres of the car we found *Listera ovata* (the common twayblade), *Dactylorhiza fuchsii*, *Platanthera bifolia* (lesser butterfly orchid), *Epipactis helleborine* and *Epipactis atrorubens* (the broad-leaf and dark-red helleborines respectively) growing in abundance. Further on we spotted the chlorophyll-free parasitic orchid *Neottia nidus-avis* (bird's nest orchid) in the shade beneath the pines and spruces as well as a delightful *Cephalanthera rubra* (pink helleborine). It was easy to see why the latter is sometimes referred to in German as the Waldvöglein, 'little bird of the woods' because of the winged appearance of the flowers. The meadows offered masses of different species of fragrant orchids: robust pink *Gymnadenia conopsea*, more delicate white to pink *Gymnadenia odoratissima* as well as some wonderful *Gymnadenia nigra* (the vanilla orchid). This really did smell strongly of vanilla, true precisely to its name, and it was well worth getting a nose close to the ground to appreciate these scented flowers.

Other orchids we may have seen were *Gymnadenia rubra* (the red vanilla orchid) and *Spiranthes aestivalis* (summer lady's tresses); with so many species it was hard to keep up. Higher in the valley, lush informal meadows contained drifts of *Hieracium aurantiacum* and *Plantago media* while patches of *Gentianella germanica*, *Tofieldia calyculata*, dark maroon *Pedicularis recutita* and *Pedicularis rostratospicata* (beakless and flesh pink louseworts) were dotted throughout. We also spotted *Coeloglossum viride* (frog orchid). Nearing the hut at the top of the ridge

we arrived at expansive mountain views above thin and rocky soils. Growing in this habitat was the scented sub-shrub *Daphne striata*, deep-blue *Acinos alpinus*, *Primula farinosa* (birds-eye primrose) and the very lovely pale-cream *Primula auricula*. We also found the distinct *Botrychium lunaria* (moonwort fern). It was a great place to stay.

More plants emerged next day on our return journey. There were *Campanula persicifolia*, *Stachys germanica*, a fruiting *Daphne mezereum* and our final orchid, *Ophrys insectifera*. This, the so-called fly orchid, is named for the remarkable way it mimics the appearance of flies, so as to attract them for pollination. Arriving at our car we breathed out, absorbed what we had seen and prepared for one more walk at the end of the valley where we were to spend our final night. The path led through meadows of great purple spikes of *Carduus defloratus* (alpine thistle) to a rushing stream while in the distance a cascade offered who

Meadow collage, Left to Right: *Gymnadenia conopsea*, *Epipactus helleborine*, *Neottia nidus-avis*, *Listera ovata*, *Gymnadenia albida* and *Cephalanthera rubra*





Daphne striata

knows what exciting species. We found *Gymnocarpium dryopteris* (the oak fern) and sweet *Pyrola minor* (lesser wintergreen) both growing tucked into the riverside habitat and encouraging us to absorb the quietness of this remote valley.

I thought of the many other visits I had spent in the Alps from the time I was very young through to now. Their charm and atmosphere were still here and during this visit they again offered their familiar elements: music and culture; the usual and the rare plants; and the wonder of big mountains. However, I now appreciated how easy they are to reach and get around and how accommodating they are for most budgets. I travelled by train easily enough, would recommend that, and indeed it would have been possible

to make the whole visit by public transport to minimise environmental impact. The stay at the end of the valley gave us all a final chance to get together, review what we had seen, and see the traditional way the land

Primula auricula



Coeloglossum viride



is managed. It benefits the enormous variety of plant species. For example, small haystack hillocks were dotted through the fields and an Austrian farmer was steadily hand scything his hay.

Before turning in I looked at the valley stretching into distance, the woods and meadows above us, crisp mountains beyond, and paths weaving in many directions. There is a wonder of new plants to discover here, new ways to walk, friends to meet, and a playground of extraordinary landscapes to explore. I look forward to a return to the mountains...



Our quintet at Blaser Hütte





Some Charms of Paeonies

Diana Pooke*

Paeonies are some of the most popular and ornamental of perennial garden plants and they have a very interesting history. There are 34 herbaceous paeony species to be found in the wild in a band running through Asia, Europe (especially around the

Paeonia 'Solange', Lemoine 1907

Lemon's Paeonia 'Edulis Superba'



**This account is based on two articles in the Journal of the Ontario Rock Garden and Hardy Plant Society (July and August 2020, ISSN 1203-6846)*

Mediterranean) and a couple are even found in western North America (*Paeonia californica* and *P. brownii*) but by far and away they are most commonly found in China, which is the only place where wild species of the tree paeonies are to be found. Like many Chinese plants, they survived the last Ice Age, when glaciation wiped out similar flora in North America and Europe.

Paeonies are named for Paeon, physician of the gods, pupil of Asclepius, the Greek god of medicine and healing. He is said to have healed Hades, god of the underworld, with a concoction of paeony roots; they are still used in traditional Chinese medicine. It was as a medicinal plant that paeonies were spread around the world. *Paeonia officinalis* (*officinalis* relating to medicine and herbalism) was always to be found in monastery herb gardens and thus one of its common names is *The Benedictine Flower*. This paeony has maintained its popularity over the centuries and is still common today. If you have an old, double, bright red paeony that has no scent and early flowers, you probably own *Paeonia officinalis* 'Rubra Plena'.

Another paeony popular for medicinal purposes was *Paeonia mascula*. It is less widespread than *P. officinalis* because it is somewhat less hardy. The roots of *P. officinalis* and *P. mascula* (known respectively as the female and male paeonies) were used for childbirth, warding off evil spirits, gall stones, jaundice, epileptic seizures, coughs and teething pains. Paeony seeds, popped like pills, were thought to prevent bad dreams or, if used in a poultice, they relieved stomach aches. From monastery herbals, paeonies moved to cottage gardens. Lay people worked in monasteries and it is likely that bits of root somehow found their way home to the workers' gardens.

A species: *Paeonia tenuifolia*



Paeonia 'Solange' - Weak stems!



Paeonies soon became beloved for their ornamental value. Their growing for purely decorative purposes probably dates back to the end of the 18th century when the first Chinese herbaceous and tree paeonies reached Europe. Most important among these was *Paeonia lactiflora*, the one that contributed that glorious characteristic scent to so many of the traditional paeonies we know today. Nicolas Lemon from France was the first of many to produce new varieties from Chinese herbaceous seeds. His beautifully scented *Paeonia* 'Edulis Superba' was introduced in 1824. These early *lactiflora* hybrids were mainly intended for the florist's trade. They tended to weak stems, acceptable for florists but a real problem in the garden; we are all well acquainted with these lovely old-fashioned doubles ending up face down in the mud after a rainstorm.

From a breeder's standpoint the *lactiflora* cultivar had been taken as far as it could go. The first world war played havoc with paeony growing in Europe and it is not surprising that the torch of breeding crossed the Atlantic to result in some of the most gorgeous modern hybrid paeonies being developed in North America.

Paeony Breeding - the Canadian Connection

The family of William Saunders emigrated from Devon to London in Ontario when he was thirteen. At first apprenticed to a local pharmacist, by nineteen he had opened his own business which he expanded to selling medicinal plant extracts. A self-taught entomologist, botanist and agriculturalist, he rose to several prestigious roles. As a charter-member of the Royal Society of Canada, he became director of the new Dominion Experimental Farms system in 1866, where he did important research into cereal culture, dairying and horticulture. In 1869 he bought a farm east of London where he planted fruit trees and experimented in hybridization. His six children spent summers at the farm, where he encouraged them to spend hours experimenting in hybridizing. He brought the first paeonies to the Central Experimental Farm in Ottawa (now a National Historic Site of Canada) where in the 1890s

Saunders crossed *P. peregrina* x *P. lactiflora* to make *P.* 'Flame':



Lyman Cousins hybridized to produce *Paeonia* 'Coral and Gold'



he evaluated 150 different cultivars. The collection deteriorated over the years but the paeony beds have now been largely restored. William's son Arthur Percy's love of paeonies made him famous. By 1920 he was a professor of chemistry at Hamilton College in New York; nevertheless, he decided to try his hand at paeony breeding. He went back to the hybridizing drawing board — going back to basics and crossing the original species. Over the next thirty years, Saunders crossed *P. lactiflora* with every other species paeony he could find, starting with *P. officinalis*. The results were sensational. He added brilliant red to the palette by making crosses with *Paeonia peregrina* (the Greek paeony). Known as *Father of the Hybrid Paeony* he introduced a new range of almost day-glo colours and much earlier bloom times. A cross of *P. peregrina* x *P. lactiflora*, produced the famous *P. 'Flame'* and *P. 'Cytherea'* both of which are still popular and widely available.

Lyman Cousins (1889 - 1973)

Lyman Cousins of London, Ontario, was a lithographer, photographer, gardener and plant breeder for over forty years. His work on paeonies was exceptional and he was known for his *Inner Glow* hybrids such as *Paeonia 'Coral and Gold'*, *'Etched Salmon'* and *'Ann Berry Cousins'*. They had luminous new colours that included peach and salmon and were garden-worthy, with strong stems to support the flowers. He first exhibited at the American Paeony Society's show in 1970, where he took the prestigious Saunders memorial medal. His stock was acquired by Chicago's Klehm Nursery, which introduced and registered many of his crosses.

Tree Paeonies

Tree paeonies are only to be found in the wild in China. They became known as the *Imperial Flower* because growing them was the prerogative of the emperor. The Chinese have hybridized paeonies for thousands of years. The species of tree paeony are: *P. lutea* var. *ludlowii*, *P. rockii*, *P. ostii*, *P. decomposita*, and *P. delavayi*.

A Japanese Moutan Tree Paeony:
Paeonia suffruticosa 'Tama Sudare'



Paeonia 'Cytherea' - a hybrid
of *P. peregrina* x *P. lactiflora*



Japanese Moutan tree paeonies were introduced into Japan by Chinese and Korean monks during the eighth century A.D. Further developed by monks, they became favourites of numerous Japanese emperors and were planted and revered in temple gardens in the cities of Kyoto and Osaka. The Japanese now have a well-developed industry of grafting tree paeonies. In North America we can look again to A P Saunders, and to his friend William Gratwick, who inherited many of his choice hybrids and continued the breeding program. He also imported *Paeonia suffruticosa* seed from Japan to work with.

Nassos Daphnis was born in Sparta, Greece, and was a close friend and business partner of William Gratwick. Today, the Daphnis hybrids represent the 4th, 5th and 6th breeding generations. From the start, he established extremely high judging criteria with only very small numbers achieving the ultimate accolade of being given a Greek mythological name

Itoh Paeonies

Itoh, or intersectional, paeonies are a cross between herbaceous and tree paeonies. They have the foliage of the tree but lean on the herbaceous part of their heritage for improved hardiness and cold tolerance. Paeony breeders yearned to produce a true yellow-flowered herbaceous paeony. The only yellow species herbaceous one was *Paeonia mlokosewitschii*, affectionately known as *Molly the Witch*. Unfortunately, she proved very reluctant to pass on her yellow genes. There was a strong yellow, however, in the tree paeony species *P. lutea*. One difficulty was that tree paeonies flower at a different time to herbaceous paeonies; storing pollen for the cross was a problem. Around 1948 the puzzle was solved by a Japanese amateur gardener. Toichi Itoh applied the pollen from a yellow tree paeony 'Alice Harding' to the herbaceous 'Kakoden'. He succeeded in getting a handful of seeds. When they grew, most seedlings looked like herbaceous paeonies but nine had foliage typical of tree paeonies. Unfortunately, Itoh died in 1956 without ever seeing his hybrids flower. Nevertheless, his work was carried on by his family and his paeonies flowered for first time in 1963.

Paeony Flower Forms

There are many modern herbaceous paeony cultivars and more are added every year. They range from flowers having as few as five petals to those containing hundreds of petals. The American Paeony Association has usefully classified these cultivars into six categories depending on flower form. They are: Single, Japanese, Anemone, Bomb, Semi-double, and Double. Many of the modern herbaceous paeony cultivars defy the basic forms. Some have top knots and frou-frous that make you scratch your head to wonder if they are doubles, semi-doubles, anemones or Japanese. No matter, they are all gorgeous.

Facing: Categories of *Paeonia* cultivars

Above: Single, Japanese, Anemone; Below: Semi-double, bomb, Double

Single paeonies have one or more rows, five to ten large (guard) petals and pollen-bearing anthers. They produce seeds. Examples are: *P.* 'A La Mode', *P.* 'Flame' and *P.* 'Nymph'. Most species paeonies are single in form.

Japanese paeonies have no free pollen on their anthers, their stamens have started to double, and the filaments have become flattened. There are guard petals and elaborate central bosses. They do not produce seed. Examples are: *P.* 'Do Tell', *P.* 'Fancy Nancy'. Japanese paeonies are so named because they are the preferred flower form of the Japanese, not that they necessarily come from Japan.

Anemone paeonies have their staminoids transformed to petaloides. There is no pollen, no seeds, and there are one or two layers of guard petals. Examples: *P.* 'Charles Burgess', *P.* 'Gay Paree'

Semi-double paeonies have five or more guard petals with a prominent centre of pollen-bearing stamens. They have more than one row of guard petals emerging from an exposed flower crown. They can sometimes look like doubles, except that they have visible anthers when the flowers are in full bloom. Examples: *P.* 'Paula Faye', *P.* 'Coral Charm'.

Bomb paeonies have petaloides that have become inner petals, almost always the same colour as the guards. The overall effect is of a ball sitting on a plate. Bombs are very similar to double paeonies except the guard petals are more prominent. Examples: *P.* 'Red Charm' and *P.* 'Mons. Jules Elie', *P.* 'Angel Cheeks'.

Double paeonies have dense clusters of broad petals that make up large and full blooms. There are multiple rows of petals, no trace of stamen or stigma. Examples: *P.* 'Red Grace' and *P.* 'Bess Bockstoece'.



Dividing Herbaceous Paeonies

Autumn is the best time to divide paeonies, when they start to go dormant around late September to October. The easiest and best age to divide a clump is after about four years. There isn't really a time limit although clumps deteriorate over the years and become harder to dig, lift and divide. Do not move a large clump intact – always divide it. Dig around it a good way off the crown. Narrow, deep border spades are the best implement. Dig the first spade depth facing away from the crown. Turn around and dig a second spade depth down and under the root ball. Use a hose to wash off soil from the root ball so you can clearly see the buds and roots and the logical division points. Use a strong and sharp implement to cut through the crowns. I have used boning knives, narrow saws, even hammer and chisel. All worked reasonably well.

The various paeonies have their own root structures that need different treatment when dividing. *Lactiflora* paeonies (traditional, double and most Japanese) have long thick roots emanating from the crown. On old clumps some of the roots are large and thick; divisions with newer and thinner roots re-establish more rapidly. The amount of root in a paeony division is determined by the number of eyes in it. The American Paeony Society recommends: '*Allow a piece of root, no smaller than the size of your index finger, to remain for each eye of the division. An optimum division has 3 – 5 buds, (7-10 maximum)*'.

Modern Hybrid Paeonies

Modern hybrids establish rapidly and may be divided more often. Many of them and some species have fewer tuberous roots that are attached to a narrow crown by thin roots. Several, especially the Saunders and the coral-coloured ones, have '*adventitious buds*' on roots that allow propagation by root cuttings. More importantly, they will readily regenerate from bits of root that might be left in the ground. In his book *Paeonies*, Allan Rogers lists those that are prone to this behaviour. I have a revenant *P* 'Paula Fay' that I have been trying to dig out of the rockery for seven years. Each time I dig it out I think I have got rid of it ... and it comes right back. Another advantage is that you may bury all the rubble left over from plant division and the odds are that these hybrids will re-grow from the bits of roots. The chunks of root left over from dividing an old-fashioned *lactiflora* will not regenerate in this way and are only good for composting.

Dividing Tree Paeonies and Itoh Intersectionals

Tree paeonies are usually grafted onto herbaceous root stocks. However, they may be divided provided the plant has multiple stems. Their roots are long and thin, so try to retain the maximum amount of root. The blooms appear on old wood so don't cut back stems when dividing. Intersectional paeonies (Itohs) should be divided in the same way as herbaceous paeonies.



Lactiflora paeony, lifted and cleaned



Dividing Tree paeonies. Only divide if the plant has multiple stems.

Planting herbaceous paeonies

Never plant where a paeony has grown before; select a sunny and well-drained place with sun for at least half the day; avoid crowding by other plants; do not plant too close to large trees or shrubs; use any good garden soil. Sandy soils make more foliage and less blooms. Clay soil makes for slower growth but better flowers and is less liable to nematodes. Here is my own brief and concluding practical guide:

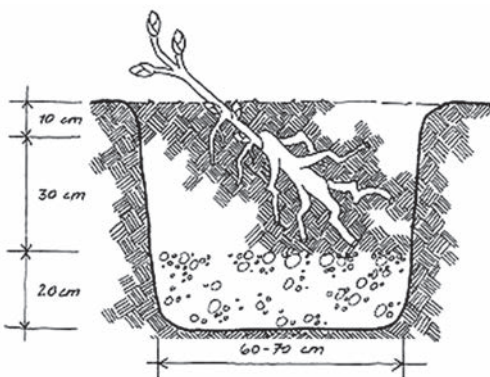
- Dig a hole appropriate to the size and orientation of the division, leaving plenty of room around it. The hole should be wide and shallow.
- Place root in the hole with the eyes pointing up. The direction of the roots doesn't matter. The eyes may be at various levels but position the plant so that there is no more than 5 cm of soil above the lowest bud.
- Fill with loose soil, working it among the roots and watering as you go.
- If planted in the Autumn in frost-prone zones, mulch with at least 10 cm of mulch or evergreen cuttings – remove as soon as Spring growth starts.
- If you want to fertilize, bulb fertilizer or bone meal is best.
- Do not mulch over the crown with manure or compost because this too easily causes crown rot.
- Do not disturb. Paeonies resent being moved.

Planting Itoh Paeonies:

- Plant Itohs as you would a herbaceous paeony but be sure to try and straighten roots if the plant has been crammed in the pot.

Planting Tree Paeonies

- Plant at an angle with graft 10 cm below soil level to encourage the paeony to develop its own roots and develop multiple stems.
- Plant in well drained soil.
- Shelter from winter winds.
- Shade from afternoon sun.





70 Years Ago:

A Journey in the Spanish Sierra Nevada

Richard Green

I draw from an original article by Vernon Heywood published seventy years ago in the *Journal of the Scottish Rock Garden Club* (volume 7, 1950). Here are selections of the original text interspersed with my comments and pictures taken on a visit to the same area nearly seven decades later in June 2016.

The following are some notes on part of an expedition made to Spain during June-September, 1948, under the aegis of the Royal Horticultural Society, in whose Journal a full account will be published later. I (Vernon Heywood) travelled with Mr Peter H Davis. Most of our time was spent in the Andalusian provinces and at a season which, if ideal for plant and seed-collecting was not the most pleasant for travelling. A few words about the climate of Andalucía would be in place here. In June-September it ranges from hot to very hot, with temperatures of 30-40 degrees C but humidity is low, rainfall in the same period is so sparse as to be ignored, although torrential thunderstorms are not unknown, and in the high mountains morning mists can be quite unpleasant. Andalucía is, after all, "Sunny Spain" par excellence, if not so luxuriously fertile as the travel books would have us believe; the famed acres of olives, orange-groves, vineyards and terraces of figs are indeed there, but much of the land is barren, unproductive steppe, as desolate as one would care to see.

My (Richard Green) son's announcement that he was arranging for his wedding to take place in Málaga on the Spanish Mediterranean coast immediately suggested to me an opportunity for some botanising in the Sierra Nevada mountains. It was an area that my wife and I had not previously visited, so we spent a fortnight of June 2016 in the mountains before the family festivities began.

We arrived in Granada by the mail train one breathless day, and having piled our presses and collecting gear onto a one-horse wagon trotted into the Puerta Real in search of a hotel with plenty of balconies for our prodigious quantities of pressing-paper. This accomplished we made our preparations for a sortie into the Sierra Nevada, the gigantic snow-tipped range

Above: a view in the Sierra Nevada

of black schist which towers threateningly above the town. As our expedition was, in a sense, an official one, [the expedition was actually sponsored by the RHS] we sought out the Ingeniero Jefe de Montes, - the Chief Forester – and after much delay and argument transport was arranged. Very early on a July morning we boarded a tranvia (something between a tramcar and a train) which took us to Cajar, where three mules, each with its inevitable muleteer, awaited us.

In contrast, we took an early morning flight from Glasgow straight to Málaga, and lunchtime saw us driving our hire car along the coastal motorway and then up into the mountains on the A44. It was a breathlessly hot day, very similar to those experienced by Vernon. We stopped a couple of times en-route, but the vegetation too was mostly dry and shrivelled. It was with some relief that we turned off east, avoiding Granada itself, and passed close to Cájar, which is now part of the greater Granada area. We then headed into the northern foothills of the mountains with the car's air conditioning still turned up high. Yes, we had a balcony at our hotel, but it had taken us only about twelve hours to complete the journey from our home in Glasgow to the hotel in Spain. Quite different from the several days it would have taken 70 years ago.

Well loaded we set off on the long ascent to the Albergue Universitario at 2,125 m (Granada itself is 670 m). The climb from Granada to the heights of the Sierra Nevada is, by its very contrasts, a fascinating and instructive experience; at the foot sugar cane, tropical fruits and flowers luxuriate, and after transitions through the regions of citrus fruits and olives, of wheat, potato, and rye, of cherries, walnuts, and chestnuts, and above the evergreen and deciduous oaks, one arrives at the Alpine zone. There in the vast micaceous and schistose screes, in the granitic rubble, and in the spongy turf soaked by the meltwater from the perpetual snow sheets, grow rock-plants and Alpines to suit the most discerning taste.

Thymus longiflorus



The journey up from Granada to the mountains is still a fascinating and instructive journey through the vegetation zones from tropical to alpine. The road passes through varying soil types and the vegetation changes accordingly with soil as well as with altitude and with the aspect of the slope.

*At the beginning of our journey the low walls were covered by the blue sprays of *Trachelium coeruleum* and pink masses of *Putoria calabrica*; countless Labiates and Scrophulariads – Thymes, Ballota, Teucrium, Linaria, Chaenorrhinum – in crumbly brown fruit were all that remained of the spring flora. *Catananche coerulea* still showed its violet-blue heads and the dark green shrubby *Digitalis obscura* covered with orange-red flowers was, in places, quite frequent on the basic soils.*

We found many of the same plants in flower as we travelled up the mountains, some nice plants; sadly, many of these prove difficult to cultivate at home in the damp climate of the west coast of Scotland. The *Digitalis obscura* in particular is an eye-catching plant but I have never been able to keep it growing here in Scotland beyond one year.

*In a few hours we reached the slopes of El Dornajo, which rises to 2214 m. This limestone outcrop supported a typical calciphilous flora including *Thymus granatensis* var. *longiflorus* – very fine colour forms in great profusion – and silvery carpets of *Convolvulus nitidus* [or *C. boissieri*] just coming into flower.*

Digitalis obscura



The area that Vernon visited is now about a one hour drive from Granada and, because it is so close to a major conurbation, it has been developed as a ski resort. The road from Granada via Cájar has been widened, and a new wide route has been pushed up the mountain towards the top to allow easy access for skiers. It is still possible to turn off the new road onto the old via El Dornajo, and this is quiet and now mainly used by cyclists and botanists! This allowed our usual slow progress, with frequent stops for plants at any interesting areas. It is quite obvious whenever one leaves the acidic soil and moves onto the limestone. We pulled over just round a major hairpin bend where *Convolvulus* could be seen on the limestone gravel from the car windows, and a quick scramble up the crags brought gasps of amazement at the silvery mats in all directions.

By early evening we reached the Albergue sheltered below the Peñones de San Francisco – a desolate spot. In the background lies the zeppelin-like dome of the abandoned Refugio, and as far as the eye can see stretch great screes and mounds and hills of schist, all shades of grey and black. The majestic Picacho di Veleta, black against the sun, lies Sphinx-like in the distance surrounded by snowfields.

A direct journey from Granada to the Albergue now takes only fifty minutes non-stop by car along the new tarmac road. The road is one of the highest in Europe, and is used as a test route by car manufacturers checking their performance. The public road



El Dornajo showing the habitat of *Convolvulus boissieri*



finishes with a barrier just above the ski resort in the car park at Hoya de la Mora. The desolate ambiance of the area seventy years ago has been replaced by a bustling ski village with the attendant hotels, car parks, and ski tows. The mounds of schist have also been scraped flat to make a ski basin, but many of the plants which were previously visible in this area can still be seen around the edge, which remains untouched by progress. The Albergue is still open as a hostel, and the old abandoned Refugio has been refurbished for the use of the Spanish army.

Next morning we packed a picnic lunch and, complete with flower-presses, vasculum, cameras and trowels, we made our way at a leisurely pace to the Laguna de las Yeguas. Beyond the scree lies a vast scree of schist and limey rubble where a profitable hour was spent collecting some of the countless alpines



The old Refugio at 2550 m

that covered our way. It was at this locality that Boissier discovered *Erodium cheilanthifolium*, a species common also on several other southern Spanish ranges. Here the silvery leaves are quite free from glands and the whitish or pale-pink flowers veined with purple, the upper two petals blotched a pale carmine, appear from June onwards.

The old road is still useable beyond the car park, but only by walkers and cyclists, and it affords quick and easy access to the higher areas of the mountain. We could also find many alpines including the *Erodium* still growing in the gravel in the undisturbed areas within easy walking distance of the car park.

As we neared the snow, *Plantago nivalis* appeared in the moraine as thousands of silvery-white rosettes flecked with black and yellow flowers. With it grew *Viola nevadensis* – perennial clumps of rounded leaves which flourish in fairly dry rocks, screes, or even, as here, in slow-moving meltwaters. This alpine pansy is another of Spain's neglected treasures; late fruiting (about September) probably explains its absence from our gardens. The flowers, which are profusely borne, are generally a shade of deep lavender or blue with a distinct yellow eye, but I have also noted all-white and all-yellow forms.

This *viola* can be seen everywhere in several different colour forms from violet through blue to yellow on Pico del Veleta and all of the surrounding mountains.

Standing on the summit of Veleta you can see on a fine day across the Mediterranean to the mountains of the Rif [in Morocco], their peaks projecting



Erodium cheilanthyfolium
Plantago nivalis





Viola nevadensis near the summit of Mulhacén, next to Pico del Veleta

above the haze. The few plants growing on this imperial viewpoint including the endemic *Saxifraga pubescens* ssp. *nevadensis* [which is now regarded as *Saxifraga nevadensis*].

In 2016 we walked to the peak of Mulhacén, the highest mountain in Spain, which is another peak within the Sierra Nevada massif, with Pico del Veleta nearby. The same views still greet the walker, and the same plants mentioned in the original article can all still be found between the rocks.

After a few days the presses were filled with plants too numerous to mention, and we regretfully hired mules to take our baggage down to Granada. It was still dark when we left the Albergue at 6 o'clock in the morning, and it was some time before plants became discernible. The route we chose led into the Barranco de San Geronimo and up the other side to the Cerro Trevenque, an impressive dome of white limestone darkened on one side by *Pinus nevadensis* f. *nevadensis*. It was not easy going and the mules had to be dragged up loose inclines of loose red sand and clay, and piloted over treacherous limestone gravel, where paths were few if they existed at all. Two more presses were stuffed with *Verbasca* and various *Labiates* before we crossed onto the limestone for good and approached the slopes of the Cerro Trevenque. The surrounding hills were covered with *Salvia*, *Erinacea anthyllis*, *Vella spinosa*, *Berberis*, *Paeonia* and the giant stalks of the fruiting *Asphodel*. After this feast we had eyes for noting more, and stumbled mechanically, engrossed in thought, through river beds long dried up; down the gentle seemingly endless sun-baked incline to Cajar, the tranvia and leisurely civilisation.



Ptilotrichum purpureum backed by a species of white *Asperula*

We drove back down to the coast similarly engrossed in thought, as anticipation of the forthcoming family celebrations crowded back into our minds. However, this short visit had been an excellent introduction to the mountain flowers of Spain.

Erinacea anthyllis



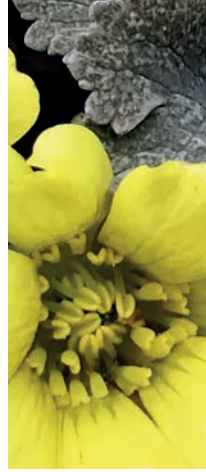
Saxifraga nevadensis



Ranunculus crithmifolius

Cyril Lafong

R*anunculus* is a large genus of over three hundred species widely distributed in the temperate regions. There are about thirty-two species native to New Zealand with at least seventeen reaching the alpine zone. Two of the more striking white-flowered species are *Ranunculus lyallii*, the largest and one of the most magnificent buttercups, and *R. buchananii*, a very distinct and beautiful species.



Among the alpine yellow species, *Ranunculus crithmifolius* is one of my favourites. It is commonly known as the *Scree Buttercup*, which aptly describes this scree-dwelling species, recognised by its basal grey, somewhat fleshy leaves divided into three lobes, which are finely dissected into segments. The short flowering stem carries a single flower. The bright yellow flowers are three to four cm across and stand just above the leaves. *R. crithmifolius* grows in the South Island of New Zealand at an altitude 600 to 1500 m and flowers in spring (October to November) in its native habitat. In the wild it is a very well camouflaged plant on the ground, where the leaves blend surreptitiously with the stony and sandy substrate.





My plant was grown from seeds (achenes) received from a New Zealand friend in March 2016. The seeds germinated a year later in March 2017. The few seedlings were pricked out when big enough to handle. The plant is herbaceous and in the dormant season needs to be kept just moist, because it is prone to rotting. It is a nervous time until top growth appears at the beginning of February, with the flowers reaching their peak in the second week in March. It is grown in full sun in a deep clay pot plunged in sand in the alpine house. The compost is loam based with some humus and a lot of added grit, making it very well drained. During growth I give it liquid high potash feed at half strength about fortnightly. Once the plant starts to go dormant, direct watering into the pot is withheld but the plunge is kept just damp. I doubt whether *R. crithmifolius* will tolerate outdoor conditions in Scotland where winters are generally too wet during the plant's dormancy.

The plant is self-fertile and seeds sown fresh in autumn will germinate in the spring. The stalk of the fruiting head bends as the seeds ripen; they are hidden by the leaves and easily missed. In common with other species in Ranunculaceae, stored or dry seeds enter a period of prolonged dormancy, taking longer to germinate.

The Crevice Garden

“How to make a perfect home for plants from rocky places”

Kenton Seth and Paul Spriggs

ISBN: 9781739903909

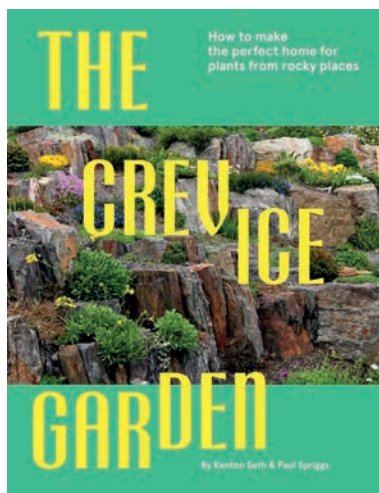
Filbert Press, about £25.

Kenton J Seth is a Colorado-based garden designer who works at home and abroad. He specializes in crevice gardens, drought-tolerant natives, and meadows. Paul Spriggs is a professional gardener and landscaper who learned to build crevice gardens directly from one of the formative innovators of the style, Zdeněk Zvolánek. Zdeněk is from the Czech Republic and contributes the foreword to this comprehensive book.

For some years since I first learned that Kenton and Paul were working on a book on crevice gardens I have been looking forward with keen anticipation to its arrival. At this point in my narrative I must declare an interest that both authors are friends of mine, so I know the reason we have had to wait has been because of the amount of research, fact-finding and pictures that the authors needed to accumulate. Gathering all that information involved visiting and photographing natural landscapes as well as examples of crevice gardens across the world – especially Czechia – and for completeness they also delved into history, taking us back to the earliest mention of the crevice garden in 1870. Their labours have resulted in a comprehensive exploration and explanation of the science, art and style of the crevice garden. The book describes how to build a crevice garden, but equally important to me are the texts and illustrations explaining why crevices work for such a wide range of plants from the mountains, deserts and coastlines of the world.

This magisterial book guides the reader through the step by step process of the crevice garden from location, orientation, the amount of materials required, to construction – explaining, through their understanding of soil science and micro environments, how such formations of closely placed rocks help the resilience of plants and enable them to tolerate a wide range of gardens and climates.

Notwithstanding the vast hands-on experience of the authors, in their chapter on *Case Studies*, they have drawn together some actual examples illustrating crevice gardens in private and public gardens across a variety of climates. These demonstrate crevices of all sizes from small containers though an array of sizes, displaying a wide range of styles and rock types



from natural stone to concrete. They include the work of other exponents of the art, many from the Czech Republic, such as their mentor and teacher Zdeněk Zvolánek.

An illustrated A-Z recommends a range of 250 suitable plants and gives the reader suggestions appropriate for most garden climates ranging from summer moist, through dry, to cacti and succulents suitable for deserts. Once you have built your crevices, the *Living with a Crevice Garden* chapter gives tips on long-term care and maintenance, covering topics such as labelling, irrigation, fertilizing, weeds, and propagation.

Crevice gardens are very appropriate in our climate-conscious world: they help gardeners address some environmental concerns that extend beyond mere conservation of rare plants, by re-using waste materials such as concrete, creating wildlife habitats, and making permeable and plant-friendly structures which surely should have a place in even the smallest of gardens.

With the exceptions of the title and chapter pages, every spread has photographs or detailed paintings by Kenton Seth to complement the explanatory prose. Any reader could learn to build crevice gardens from the images alone but reading the very understandable text also explains the science and horticultural principles that make them so successful.

As well as the authors, I congratulate the designers, Studio Noel, and the publisher, Filbert Press, for delivering such an attractive, well laid out, and comprehensively illustrated book that inspires, guides and educates the reader in a logical way from the very question of what makes a crevice garden through all the practicalities of constructing, planting, then caring long term for these fascinating creations.

The authors do not only inject the book with their own passion and international experience of building many private and public crevice beds; they cordially '*invite you to build upon and explore what has gone before*'. Their work gives you a solid foundation. I recommend this book: it will act as a reference, a guide and an inspiration to anyone who wants to rock into the world of the crevice garden.

A crevice bed makes an effective welcome at Ashbrook Nursery by Arbroath



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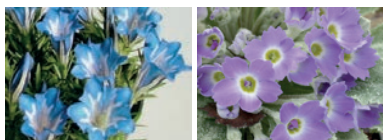
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Contact our secretary: Katrina Clow

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Membership: UK Single: £10.00; UK Family: £12.00, Rest of World: £16
Website: www.cyclamen.org



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www.fritillaria.org.uk

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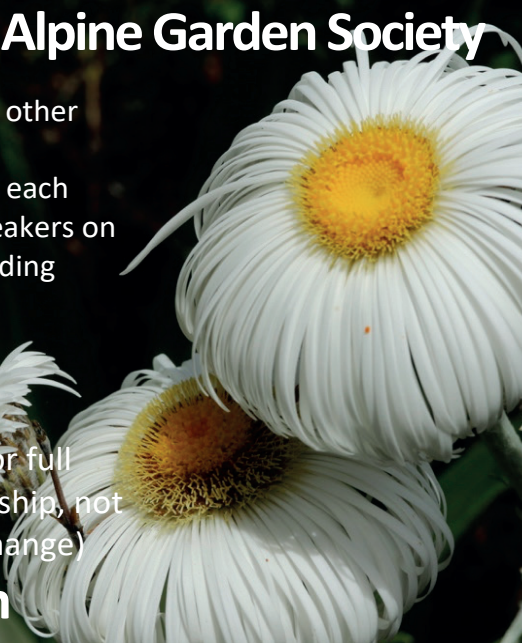
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New Zealand Alpine Garden Society

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www.thescottishauriculaandprimulasociety.com

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Contact our secretary Dr. Alison Goldie:
secretary@thescottishauriculaandprimulasociety.com

The Flemish Rockgarden Society

Vlaamse Rotsplanten Vereniging

What does our society offer:

Specialised magazine (quarterly) with: interesting cultivation advice, travelogues and plant descriptions.

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