International Rock Gardener

ISSN 2053-7557

Number 179 The Scottish Rock Garden Club December 2024

---International Rock Gardener---

December 2024

We are delighted this month to present an article from Nazgul Kenzhebaeva, Saltanat Kendirbaeva and Frazer Henderson on some highlights of the flora of Ala Archa State National Park in Kyrgyz Republic. It is an honour for the IRG to publish the work of such respected foreign plant botanists and zoologists who have been so helpful to our Member, Frazer Henderson.

Left to right:
Nazgul amongst an abundance of *Trollius lilacinus;* Salanat in the park; Frazer photographing a very small Frog Orchid, *Dactylorhiza viridis* - or so he claims!

We complete this year with a selection of plants and views in Spring from the garden in Perthshire, Scotland, of Anton and Margaret Edwards. Anton has been the Editor of the Scottish Rock Garden Clubs' twice yearly print journal, The Rock Garden, since 2006. He was recently awarded, at the Scottish Rick Garden Club Annual General Meeting, the Golden Jubilee Salver which is presented annually to an individual member for outstanding service to the SRGC. Congratulations, Anton!

Margaret and Anton Edwards in their Perthshire garden in August – photo by Julia Corden.

Cover image: *Viola acutifolia* in Ala Archa state national park.

Floral highlights of Ala Archa State National Park -

Glacial canyons, rugged peaks, hiking trails and great plants

Authors: Nazgul Kenzhebaeva, Saltanat Kendirbaeva & Frazer Henderson

View along Ala Archa river valley

Introduction

Situated 40km south of Bishkek, capital of the Kyrgyz Republic, lies Ala Archa State National Park. Established in 1976, the Park is both the oldest and the most visited of the country's many National Parks. Covering 194 sq. km, it was created with two main aims: to protect important ecosystems and provide an opportunity for natural, outdoor recreation. These twin aims are, of course, finely balanced though they do mean that most areas of the park are readily accessible via trails.

Geography

Ala Archa, located in the Kyrgyz ridge of the Tien Shan range, is centred on the steep valley of the Ala Archa River. In its upper reaches the park extends to snow fields and glaciers. The altitudinal range of the park is 1600m, at its northern entrance, to just under 5000m at its

southern conclusion and it is this wide range of altitude and its location and form, with its many microclimates, which makes the park floristically interesting with a number of distinct vegetative zones.

Note the scree and relatively narrow river valley.

View to the higher reaches of the Park.

Botanical Exploration

The vegetation of the Kyrgyz ridge, in which the Park is located, has been studied since the middle of the 19th century. The famous scientist and polymath Pyotr Petrovich Semenov (1827-1914) (left) was the first European researcher, in 1856, who studied the mountain systems of the Tien Shan and for which he later received the honorific Semenov Tyan-Shansky (literally Semenov of the Tien Shan). During his travels in the mountains he collected many geological, botanical and insectile specimens, discovered and described many species new to science (including acers) and drafted the first orographic scheme of Tyan-Shan in the form of latitudinal ranges. He is commemorated in the specific epithet of many plants including *Allium semenovii and Abies semenovii.*

In 1864, the well-known traveller and scientist Nikolai Alekseevich Severtsov (1827-1885) visited the Kyrgyz ridge and collected specimens. His explorations enabled him subsequently to declare in 1877 that the Tien Shan and Pamirs were independent mountain systems.

At the beginning of the 20th century, the Soviet scientists Robert Ivanovich Abolin (1886-1938) and Margarita Mitrofanovna Sovetkina (1892-1950) conducted long-term botanical studies and expeditions as well as collecting herbarium material, much of which has been preserved in Tashkent and other institutions. Many other researchers conducted herbarium collections, but their reports were not published, nor have their collections been preserved in the Kyrgyz Republic.

There are a range of habitats in the Park.

During the Kyrgyz Soviet Socialist Republic (1936-1991), the results of expeditions by local botanists were published in scientific articles, as well as herbarium material collected and preserved. For example, Ennafa Vasil'evna Nikitina (1893-1976) conducted detailed observations of vegetation on the watersheds of the Alamedin and Ala-Archa rivers.

In more recent times the vegetation of Ala Archa has been studied by the celebrate Kyrgyz scientific married couple Rostislav Nikolaevich Ionov and Ludmila Petrovna Lebedeva, as well as Tat'ana Vasil'evna Isakova, who worked for a long time in Ala Archa and collected data on vegetation. Their cumulative studies in the area were published in 2000 in the 'Vegetation of the Kyrgyz National Natural Park'.

In 2010, Isakova's scientific dissertation 'Flora of the Kyrgyz State Nature Park Ala Archa' was published. According to her data, 760 species of vascular plants (340 genera and 79 families) and 68 species of mosses have been registered in the Ala Archa Park. She also identified at least 20 species of introduced plants including *Larix sibirica* (Siberian Larch), *Cornus sanguinea* (Common Dogwood), *Sambucus sibirica* (Siberian Elder), *Salix babylonica* (Weeping Willow) and *Picea pungens* (Blue Spruce).

Vertical Zonation of Plants

The vertical zonation of the vegetation cover in the Park, which does overlap due to factors such as topography and aspect, is represented by:

- 1600-2100m asl – a belt of steppe, mostly grasses of the *Graminea/Poaceae* family;
- 1700-2700m asl – a forest-meadow belt, which consists of 3 sub-belts:
    1700-2000m asl – high-grass meadow;
    1700-2100m asl –juniper forests;
    2100-2700m asl –spruce forests;
- 2200-2800m asl - a belt of subalpine (cryophytic mid-grass) meadows;
- 2800-3500m asl - a belt of alpine (cryophytic short-grass) meadows;
- 2800-3700m asl - a belt of cryophyte pads (alpine plants that look like a pillow);
- 3700-4200m asl - a glacial-nival belt.

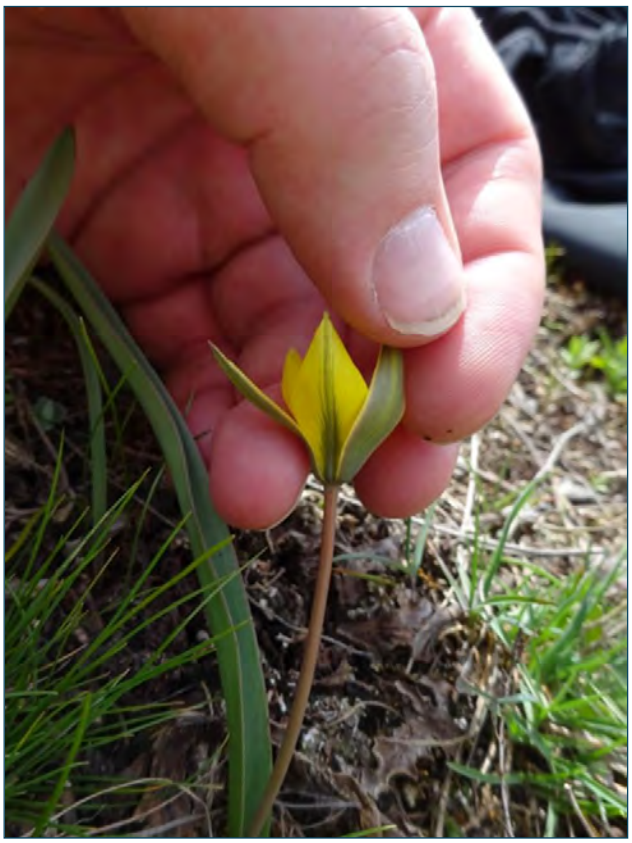
The Steppe Belt

In the steppe belt (1600-2100) the vegetation comprises mainly of plants such as *Festuca valesiaca Stipa capillata, Carex turkestanica, Artemisia dracunculus and AA. santolinifolia* and *rutifolia*.

In spring, the belt is enliven by flowering *Poa* species as well as a spectacular array of geophytes including *Allium, Gagea, Bromus, Eremurus, Iris* and *Tulipa* species.

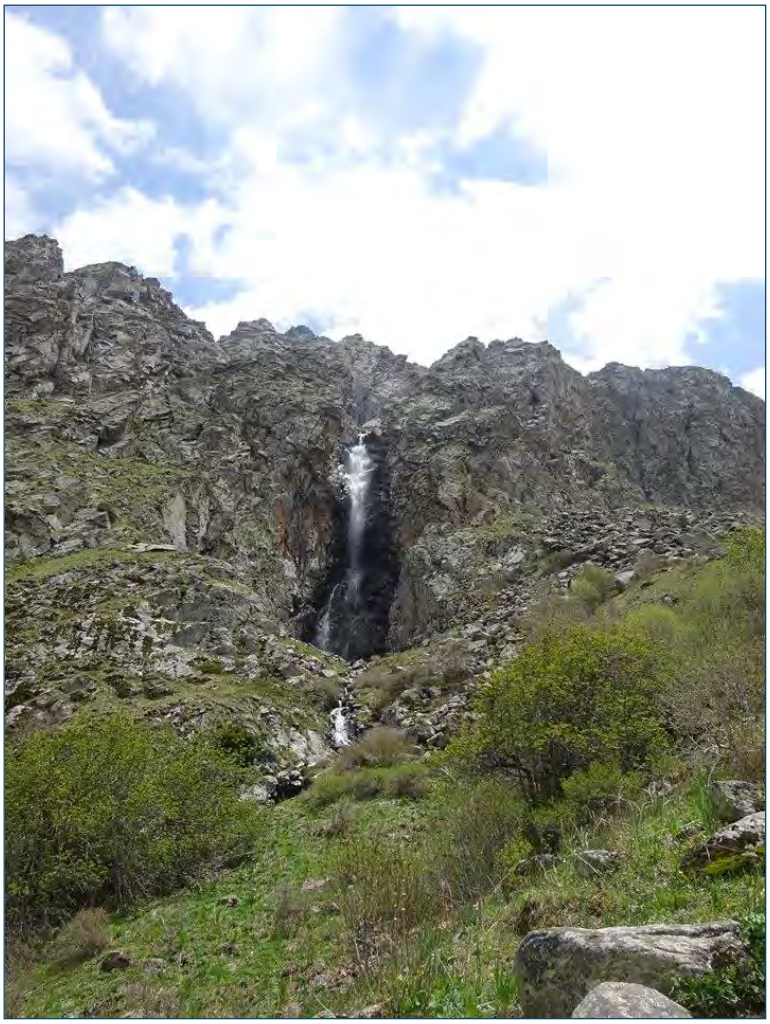
Artemisia dracunculus which is known variously Estragon, Tarragon or Russian Tarragon.

Gagea filiformis



Tulipa dasystemon

Tulipa dasystemon, for example, can be found easily within the lower reaches of the Park and is often located near the path that leads hikers to the Ak-sai Waterfall a shortish return walk (9km) from the Park's entrance which can be completed well within 4 hours, leaving plenty of time to enjoy the views.



Ak-sai Waterfall

All photographs by the Authors.

The Forest-meadow Belt

A forest-meadow belt is formed by *Picea schrenkiana*.

Among stands of *Picea schrenkiana* (Schrenk's Spruce) there are specimens with branches of orange colour the result of the effects of the rust fungus *Chrysomyxa deformans* (Diet.) Jacz. This fungus is widespread in all spruce forests of the Kyrgyz Republic. By autumn, the fungus is covered with black lesions caused by a dematiaceous mould from the genus *Cladosporium*. Neither the rust fungus nor the mould seems to impact the long-term health of the plant.

The other trees and shrubs are represented by such species as *Salix iliensis, Juniperus semiglobosa, Juniperus pseudosabina, Juniperus sibirica, Sorbus tianschanica, Lonicera microphylla, Lonicera karelinii, Atragene sibirica, Rosa alberti, Rosa fedtschenkoana, Spiraea lasiocarpa, Cotoneaster melanocarpus, Myricaria bracteata, Myricaria squamosal* and *Salix alatavica.*

Juniperus semiglobosa. The species epithet is due to the flattened shape of the fruits. The genus gives its name to the Park as Archa in Kyrgyz means juniper.

Myricaria bracteata a shrubby tamarisk with a wide distribution across Central Asia. In India it is known locally as the Kashmir False Tamarisk**.**

Meadow view: note the steep inclines.

Rosa alberti

The herbaceous cover is formed by the following plant species: *Trisetum spicatum, Poa pratensis, Vicatia atrosanguinea, Doronicum oblongifolium, Cicerbita azurea, Fragaria vesca, Rhinanthus songaricus, Euphrasia regelii, Erigeron schmalhausenii, Erigeron tianshanicus, Androsace maxima, Androsace septentrionalis, Papaver croceum, Hierochloe odorata, Calamagrostis epigeios, Melica altissima, Agropyron alatavicum, Elymus sibiricus, Saxifraga sibirica, Viola rupestris, Sedum ewersii, Rosularia paniculata, Cystopteris fragilis, Asplenium septentrionale, Geranium collinum, Clematis sibirica, Phlomoides oreophila, Polygonum songaricum, Artemisia dracunculus, Linum heterosepalum, Heracleum dissectum, Polygonum coriarium, Dianthus superbus, Campanula glomerata, Ligularia heterophylla, Papaver croceum, Alfredia acantholepis, Oxytropis globiflora, Seseli mucronatum, Pyrethrum pyrethroides, Lamium album, Conioselinum tataricum, Chamaenerion angustifolium, Allium pallasii, Aegopodium kaschmiricum, Anemone protracta, Aconitum nemorum, Aconitum soongaricum, Aconitum leucostomum, Trollius altaicus and Trollius dschungaricus.*

Clematis sibirica

Phlomoides oreophila

Because of the large number of tourists and hikers visiting the Forest-meadow belt trample-resistant and weed plant species are increasing, including *Plantago depressa, Astragalus alpinus*, (Alpine Milk-vetch) *Trifolium repens* (White Clover) *and Alchemilla retropilosa.*

Trollius altaicus habitat.

Trollius altaicus

Primula kaufmanniana

Pedicularis alberti

Geranium collinum

 ISSN 2053-7557

Campanula glomerata

The Subalpine Belt

Within the belt of subalpine (cryophytic mid-grass) meadows can be found the creeping form *Juniperus pseudosabina*, as well as herbaceous species such as *Festuca valesiaca, Carex melanantha, Ligularia alpigena, Thermopsis alpina Allium atrosanguineum, Polygonum songoricum, Pulsatilla campanella, Erigeron aurantiacus, Phleum alpinum, Primula algida, Potentilla gelida, Ranunculus songaricus, Viola acutifolia, Cortusa brotheri, Leontopodium ochroleucum, Ranunculus alberti* and *Anemone protracta*.

Left: *Allium atrosanguineum.*

Right: *Cortusa brotheri,* syn *Primula matthioli* subsp. *brotheri*.

Anemone protracta syn. *Anemonastrum protractum.*

Ligularia alpigena

Viola acutifolia (cover image)

Ranunculus albertii

Trollius lilacinus and
Trollius lilacinus in habitat.

The Alpine Belt

Among plants of the belt of alpine (cryophytic short-grass) meadows are often found such species as *Kobresia humilis, Leontopodium ochroleucum, Potentilla nivea, Thalictrum alpinum, Erigeron heterochaeta, Gentiana karelinii, Festuca tianschanica, Ptilagrostis mongholica, Carex melanantha, Alchemilla tianschanica, Geranium collinum, Festuca valesiaca, Ranunculus alberti, Schulzia albiflora, Gentiana algida, Eritrichium villosum, Dracocephalum imberbe, Trollius lilacinus, Taraxacum alpigenum, Oxyria digyna, Deschampsia cespitosa, Kobresia capilliformis, Potentilla gelida, Lloydia serotina, Polygonum viviparum, Cerastium cerastoides, Phleum alpinum, Allium oreophilum, Aster vvedenskyi* and *Dracocephalum stamineum*.

The Cryophyte Belt

At the altitude 2800-3700 m above sea level there is a belt of cryophyte pads, where some alpine plants look like a pillow: *Thylacospermum caespitosum, Sibbaldia tetrandra, Rhodiola gelida, Rhodiola coccinea, Rhodiola linearifolia, Androsace sericea, Waldheimia tomentosa, Paraquilegia caespitosa, Primula turkestanica, Oxyria digyna, Callianthemum alatavicum,*

Papaver tianschanicum, Smelowskia calycina, Oxytropis chionobia, Dracocephalum imberbe, Saussurea gnaphalodes, Pyrethrum leontopodium, Saxifraga macrocalyx, Chorispora bungeana, Draba oreades, Saxifraga cernua, Geranium saxatile, Dracocephalum stamineum and *Rheum spiciforme.*

Callianthemum alatavicum

Thylacospermum caespitosum

Rhodiola coccinea

Rhodiola linearifolia

Primula turkestanica by the side of a mountain stream.

The Glacial-nival Belt

At an altitude of 3700-4200 m above sea level, the glacial-nival belt begins, where vegetation is practically absent.

Red-listed Plants

The red-listed plants of the Kyrgyz Republic grow in the park. There are *Iridodictyum kolpakowskianum* (Regel) Rodionenko, *Saussurea involucrata* (Kar. et Kir.) Sch. Bip. and *Pyrethrum leontopodium* (C.Winkl.) Tzvel.

Saussurea involucrata

Fauna

Forty species of mammals and more than 163 species of birds have been recorded within the Park.

Information board, in Kyrgyz, Russian and English, displaying some species of the Park.

In the higher reaches of the Park, though rarely seen, are Mountain Goats (*Capra sibirica*), Marco Polo Argali (*Ovis ammon*) and Snow Leopards (*Panthera unica*).

Snow leopard statue near the entrance to the Park.

Snow leopard (*Panthera unica*) is a symbol of survival and beauty in the harsh conditions of the mountain peaks of the Kyrgyz Republic. The President Sadyr Zhaparov signed a decree "On recognition of the snow leopard as the national symbol of the Kyrgyz Republic".

In the sub-alpine belt, the larger mammals are Siberian Roe Deer (*Capreolus pygargus*), Wolves (*Canis lupus*), Wild Boar (*Sus scrofa*), Tien Shan Brown Bears (*Ursus arctos isabellinus*), Red Foxes (*Vulpes vulpes*) and Badgers (*Meles meles*). These species tend to be wary of humans and accordingly are infrequently observed. However, smaller mammals such as the Tolai Hare (*Lepus tolai*), Yellow Ground Squirrel (*Spermophilus fulvus*), Siberian Red Squirrel (*Sciurus vulgaris* ssp. *exalbidus*) and Grey Marmot (*Marmota baibacina*) can often be seen and in the case of the marmots, heard, as they give a loud screechy whistle-warning whenever visitors are too close to their burrows.

Siberian Red Squirrel (*Sciurus vulgaris* ssp. *exalbidus*)

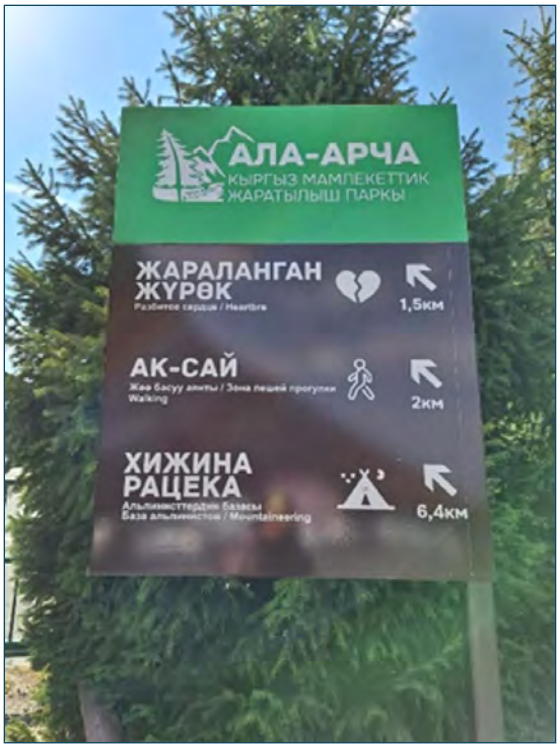
One of the many “naturalistic” tableaux in the Park's museum.

For a small area the Park has a rich avifauna with 40% of the country’s recorded bird species. The ornithology of the Park has been studied since 1960 with regular observations carried out by E.J. Shukurov and Y.G.Kormilitsyn from 1986-1997. According to their data, more than 160 species of birds belonging to 15 orders have been recorded within the Park. Notable species include Egyptian Vulture (*Neophron percnopterus*), Short-toed Snake Eagle (*Circaetus gallicus*) and Bearded Vulture (*Gypaetus barbatus*) as well as Himalayan Snowcock (*Tetraogallus himalayensis*) and White-winged Grosbeak (*Mycerobas carnipes*).
For birdwatchers, the Park has special marked routes and observation posts so that visitors can have the best chance of seeing and enjoying its avifauna.
Insects are abundant within the Park and over 80 species of butterflies have been recorded.

Pressures

Increased recreational activity has resulted, unfortunately, in uncontrolled fires, woodcutting for fuel, the picking and trampling of plants and greater numbers exploring the further reaches of the park. All of these activities are having a negative impact on the fauna and flora of the Park.

Access



The total length of the park is about 25km with a paved road of 10km from the entrance gate to the Park's small lodge, museum and main picnic and camping area. Modest entrance fees are charged to support the maintenance of the Park.

There are extensive hiking trails including the popular Waterfall trail. It is possible to venture to the toe of the Ak- sai glacier and to explore the length of the Ala Archa river valley within the Park. Limited Yurt accommodation is available for those without camping gear who wish to spend longer in the Park.

Left: Directional Board.

Right: A Yurt available to hire.

Below: Main buildings of the Park.

Nazgul Kenzhebaeva is a botanist, and a biology teacher at a private school in Bishkek.
Saltanat Kendirbaeva is a zoologist/ornithologist and Head of the Department of Biodiversity, Institute of Natural Sciences and Tourism of the Kyrgyz State University.
Frazer Henderson is a geographer and amateur botanist with an interest in the flora of the Tien Shan.

---International Rock Gardener---

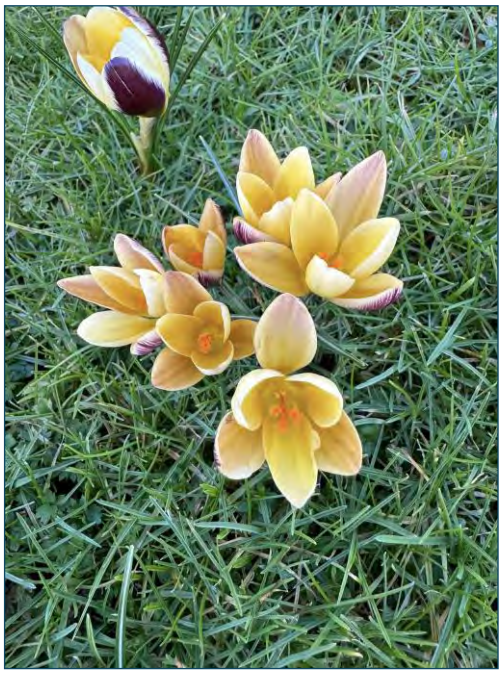
--- From a Garden in Perthshire ---

A selection of plants and views from the garden in Perthshire, Scotland, from January to May, of Anton and Margaret Edwards.

17th January -7° C this morning but the crocus spikes are already showing through the snow.

Crocus clump after five years, 18th Feb..

Crocus in grass, 28th February.



Crocus tommasinianus under trees, 28th Feb.

Rhododendron 'Snow Lady' - in her prime, 23rd March.

Rhododendron ‘Snow Lady, 23rd March. Showing flowers and finely haired foliage.

Autumn colours in Spring …

Below: *Fritillaria raddeana* is alive and well in central Perthshire,14 March.

Left, 25th March: Too wet and cold to continue happy outside work today but here is the *Betula jacquemontii* and its footsoldiers after 25 years.

Before the storm of 6th April. Where did Spring go?

Erythronium ‘Pagoda’ is a beautiful yellow peril. Plant it if you dare.

Astonishing. *Rhodo.* ‘Snow Lady’ has survived into maturity this year without frost damage. There must be a few advantages to climate change!. 8th April.

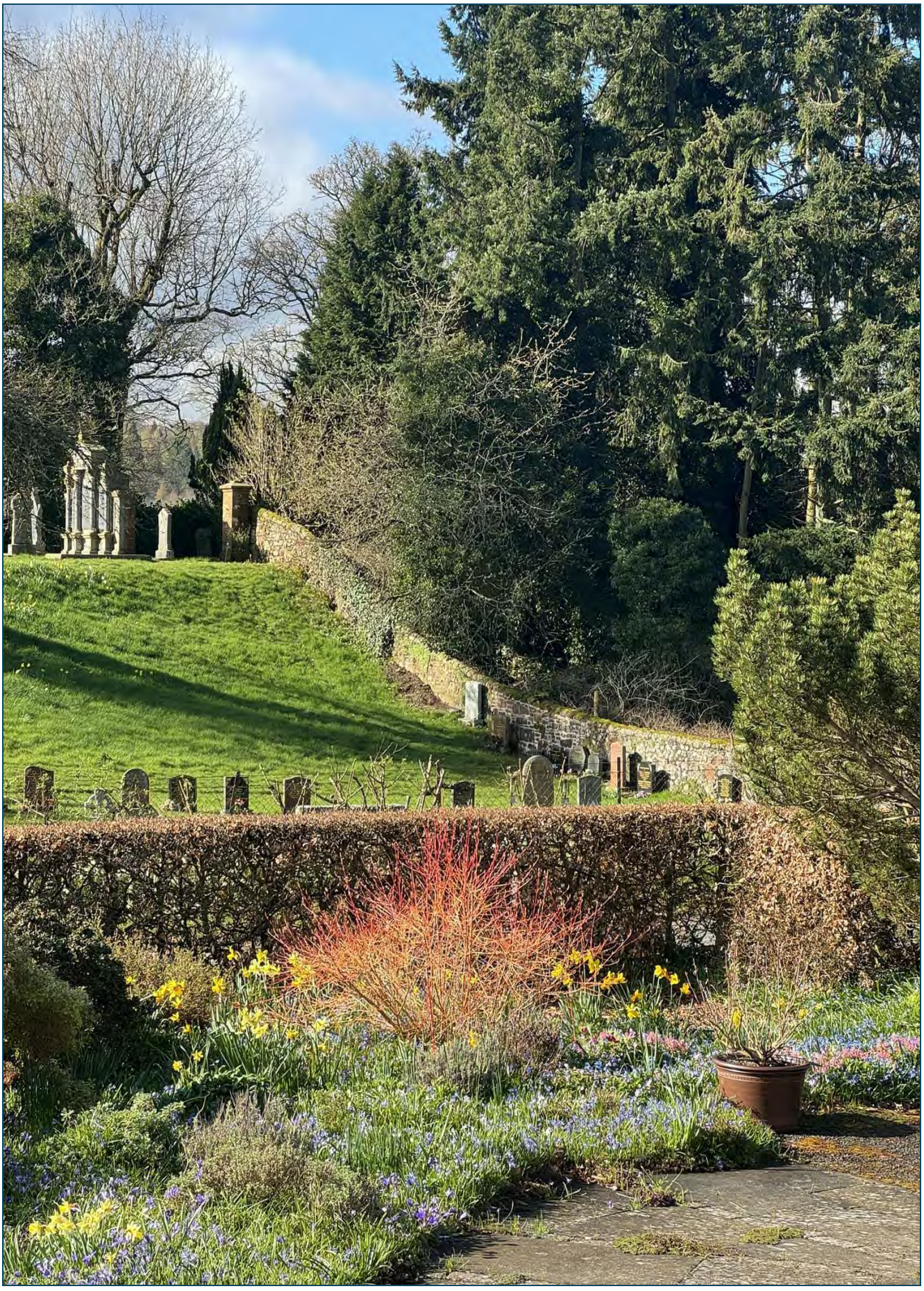
Fritillaries ‘Red Knight’ and ‘Lutea’ under the old sycamores.

Fritillaria imperialis ‘Lutea’

Fritillaria meleagris, a triple form spotted on 8th April.

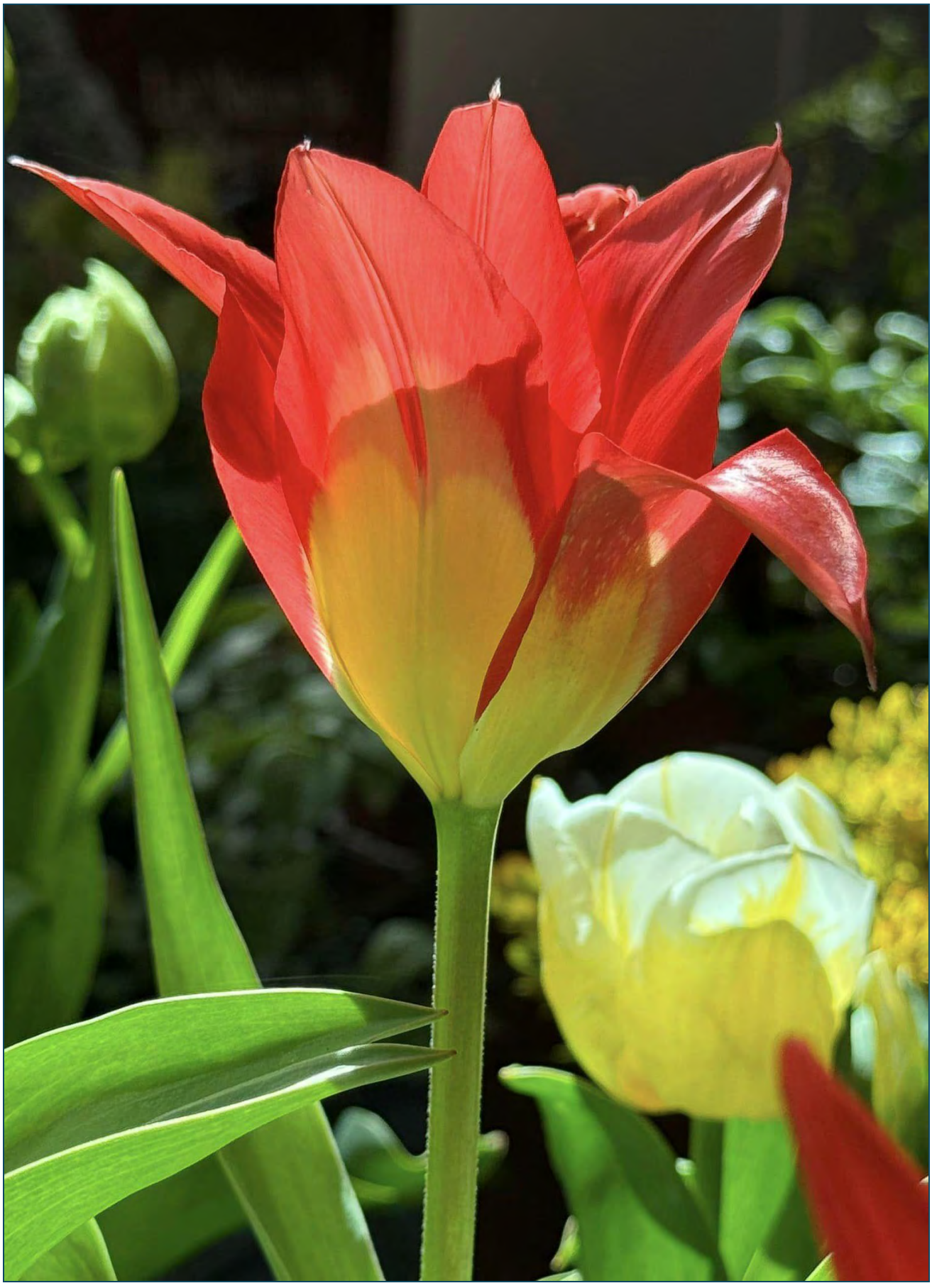
The RHS describes the yellow *Fritillaria imperialis* 'Lutea' as flowering in late spring and early summer. But here it is about to flower soon after *Fritillaria imperialis* 'Red Knight'. Is the year passing sooooo quickly? 8th April.

Plant *Fritillaria imperialis* somewhere drier than average where there is plenty of light in spring and early summer. Let them die away completely before tidying up the dead growth. Chuck a handful of blood and bone meal over the area annually. They are about a metre high.



Spring is here but *Cornus sanguinea* 'Winter Flame' burns on …

Trillium chloropetalum (?) … friend or foe? 7th April.



Things are looking up - the sun has returned to illuminate things. Caught in its rays are *Tulipa* 'Flames Mystery' on 25th April.

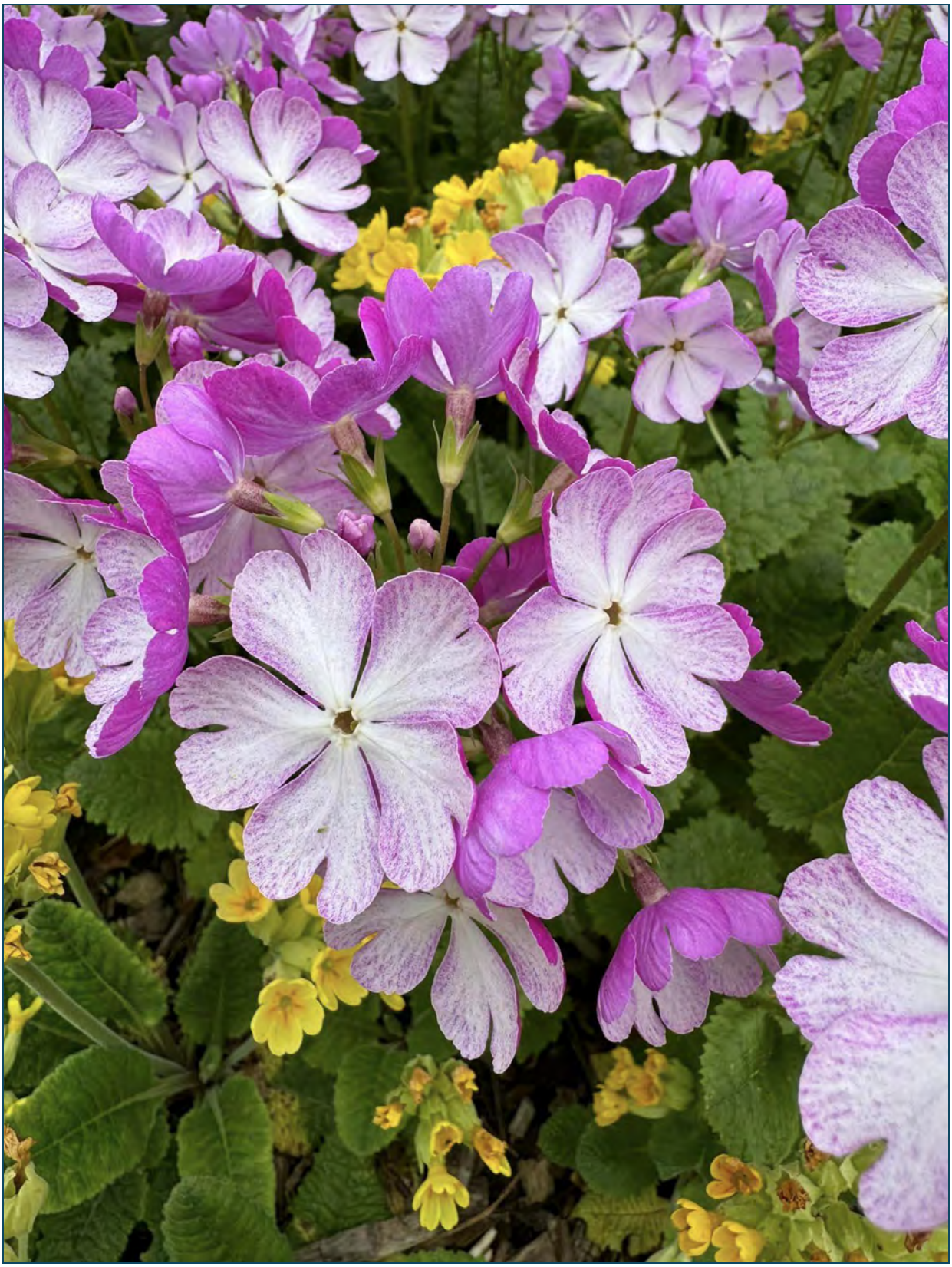
Meconopsis x cookei 'Old Rose' from Ian Christie is doing well. 28th April.

Garden view with candelabra primulas and *Cornus controversa,* the wedding cake tree.

Hidden in plain sight? I was so taken with the primula that I never even noticed the trillium until looking at this photo.14th May.

Rhododendrons: Twenty five years patience gets some beautiful results. I doubt I will see them in another 25. Carpe Diem!

Mixed primulas - *Primula veris* and *Primula sieboldii.*

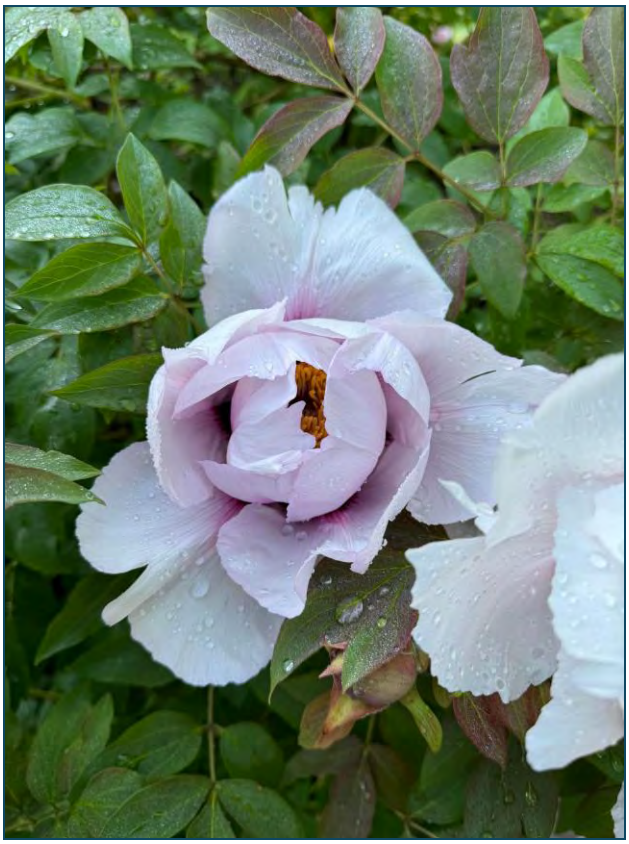


Primulas – close-up. 14th May.

A Jekyll and Hyde influence: Philipp Franz von Siebold was a nineteenth century German doctor and botanist who introduced many Japanese beauties to the West. *Primula sieboldii* is named for him. Regrettably, he was also responsible for the introduction of Japanese knotweed …

Transient patterns of *Brunnera macrophylla* ‘Jack Frost’

Tulipa sprengeri, with *Helianthemum* and other silver foliaged plants behind.



Paeonia r ockii, white.

Paeonia rockii: But can anyone confirm the variety? Is it ‘Northern Light’, perhaps?

Un-named *Phlox.*

Dreaming spires? *Veronica gentianoides.*

Bright yellow *Iris.*

Ourisia coccinea is spreading slowly in the shade of the Scots pines.

Another bright plant – this time a *Geum*.

A fine New Zealand *Celmisia* plant.

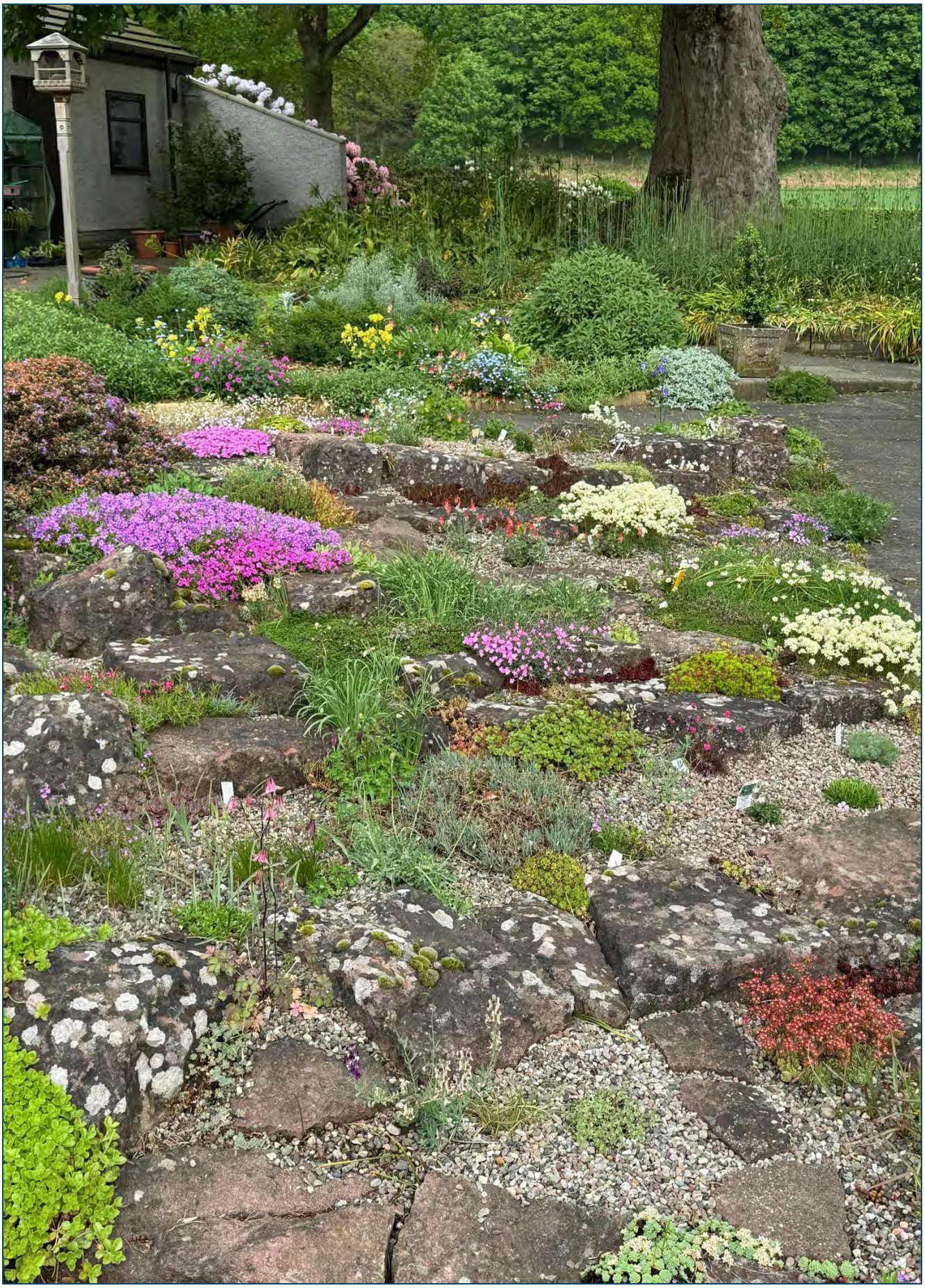
Celmisia flowers, close up.

Not all blue *Meconopsis* poppies are blue … but they all seem camera shy!

On the rock bed.

Aquilegia and *Erigeron* ‘Canary Bird’

The tenacity of life: this dianthus gradually multiplies among the barren paviors. They are laid on 10 cm of 10 mm gravel. Margaret thinks it was originally *Dianthus* 'Prince Charming' but cannot be sure and suspects it has crossed with others on the rockery. The wee clumps are all self sown.



Rock bed view.