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This month IRG presents two articles on peonies – the first on Czech bred herbaceous peonies from Pavel Sekerka and the second on tree peonies by Joe Harvey in Canada. Next there are two articles on a fabled European gesneriad, *Jankaea heldreichii,* written by a Czech, Vlastimil Pilous and Harry Jans, of the Netherlands. IRG 139 finishes with a short review on *Sternbergia*, again by Vlastimil Pilous.

Cover image: *Jankaea heldreichii,* photo by Vlastimil Pilous.

This month's authors:

RNDr. Pavel Sekerka, is the Director, Průhonice Botanic Garden where the aim is to gather gene – pool collections; preserve them and present original botanical species as well as their variability to the public, and to show the progress of breeding since Middle Age to the latest trends in breeding. The collections are thoroughly systematic and chronologically organized. Dr. Sekerka is president of the Union of Botanical Gardens of the Czech Republic and committed to their protection and to ex-situ plant conservation.

M. J. (Joe) Harvey, is an **Emeritus Professor** at Dalhousie University in Halifax, Nova Scotia where his wife Linda was the University Librarian. Born and educated in England, Joe retired to Victoria, British Columbia where this botanist/geneticist is still active in plant breeding and in promoting many plant species including hellebores, Galanthus, hardy orchids, peonies and more!

After studying at the Faculty of Science of Charles University (geography - biology), **Dr. Vlastimil Pilous** worked for 27 years for the Krkonoše Mountains National Park Administration (KNRAP). Vlastimil Pilous credits his lifelong interest to his parents, fuelled by his father, (an eminent Czech bryologist who as an old school teacher had an extensive view across natural sciences), "who took me on his trips mainly to Slovakia from the fourth grade, where I got to know the diverse components of nature." Many people have plants grown from seed from his seed list.

Harry Jans is probably the most respected of alpine plant enthusiasts in the Netherlands, known for his success in growing alpine plants, his popularity inspeaking and writing about them, as well as leading successful tours to see plants in habitat in mountain areas worldwide. All this while maintaining a remarkable private family garden with his wife, Hannie and working for the Dutch Ministry of Infrastructure and Environment. Harry, a founder member of the Dutch RGS ("Nederlandse Rotsplanten Vereniging" (N.R.V.) who has served as President for the NRV, has been honoured by other plant organisations, such as the Lyttel Award from the AGS.

Hybrid peonies in 2020 at the Institute of Botany of the Czech Academy of Sciences.

CZECH BREEDING OF PEONIES - Text and photos: Pavel Sekerka

The first Czech named variety was the tree peony *Paeonia x suffruticosa* 'Líba', which is also grown under the name 'Madame Horák'. From 1939 to 1942 Fr. Tvarůžek, the castle gardener in Dřevohostice, sowed peony seeds and nursery plants were grown on by his son-in-law A. Horák, in nearby Bystřice pod Hostýnem.

From the seedlings a plant with a semi-double, pink flower with a touch of orange and with distinctive yellow stamens was selected. This is still grown today in Bystřice. However, it is not listed in the official register of varieties of the Peony Society, nor at Carsten Burkhardt's Web Project Paeonia, which nevertheless contains a most extensive overview of varieties.

Recently, thanks to the help of Průhonice Botanical Institute of the Czech Academy of Sciences, the National Plant Conservation and Use Programme has succeeded in registering 18 varieties bred in the Czech Republic and in the Botanical Garden of Prague.

According to archived reports, there were 600 plants of herbaceous paeonies in Průhonice Park at the turn of the 19th and 20th Centuries. In 1927, the Catalogue of Průhonice Federal Gardens offered a total of 42 varieties of herbaceous peonies, of which most varieties were derived from *Paeonia lactiflora.*

In 1936 there were already 61 varieties of *P. lactiflora*, 3 varieties of *P. officinalis* and two botanical species in the catalogue. Before the war, the company imported an extensive assortment of herbaceous peonies from Bohemia (Žehušice) and from abroad (B. Ruys Dedemsvaart – Holland, Barbier et Cie –Orleans, Kelway and son - GB.). The main list has thus grown to more than 250 varieties. Because peonies are relatively unpretentious, the assortment partially survived the war and formed the basis of an assessment trial.

In 1956-75, the Institute of ornamental horticulture became involved. The plants came mainly from "woody" (tree) peony mothers, part of the plants came perhaps also from plantings in Průhonice Park, some varieties had been purchased for evaluation. The institute cautiously estimated a total of 170 varieties.

In 1968-69, Dr Jaroslav Hofman founded a collection of peonies at the Czech Technical botanical garden at the Institute of Botany of the CAS. It was based on both plants of a neighbouring institute, purchases from domestic nurseries growing peonies at the time and were also donated plants (School farm AF VŠZ Lednice – Olomučany, nurseries in Žehušice, Vejtasa horticulture in Jaroměřice) and also purchases from abroad. (Gilbert H. Wild and son, USA; Gräfin von Zeppelin, Germany; Stauden Feldweber, Austria; Staudengärtnerei Klose, Germany).

Paeonia 'Gedenken' - a parent for many of the best Czech peonies.

A review of 1982 showed the collection had 217 varieties and 10 wild Taxa. The group featured a cross-section of contemporary assortment, including modern interspecies hybrids of that time and were a good basis for experimental crossing.

Ing. Uljana Blažková, took over Dr. Hofman's collection, in the 1980s and 1990s. In the 1970s

seeds obtained to improve the strains were mainly hybrid peony and varieties of *P. lactiflora* with a Japanese flower shape. Some seedlings obtained were of very high quality. Selection for the first stage represented around 50 plants, in the second stage (2011) 31 seedlings were selected which were further multiplied and evaluated.

P. 'Czech Poppy'

The most interesting varieties belong to the "poppy series". These plants have as their origin the 'Gedenken' variety. The seeds came from an early hybrid variety Helen von Stein Zeppelin had selected and named (1990) in memory of Mrs M. Fischer (Illinois, USA), from. Its sister, the American variety is 'Marie Fischer' ('Moonrise' X unknown, 1973, breeder Hubert A. Fischer).

Some characters of this series of hybrid peony were inherited by descendant varieties of 'Gedenken' sown in Průhonice: 'Czech Poppy' and 'Silesian Poppy' (CH05, light pink). 'French Poppy' were by their foliage, random seedlings, now registered by Uljana Blažková and Pavel Sekerka with the American Peony Society.

P. 'Silesian Poppy'

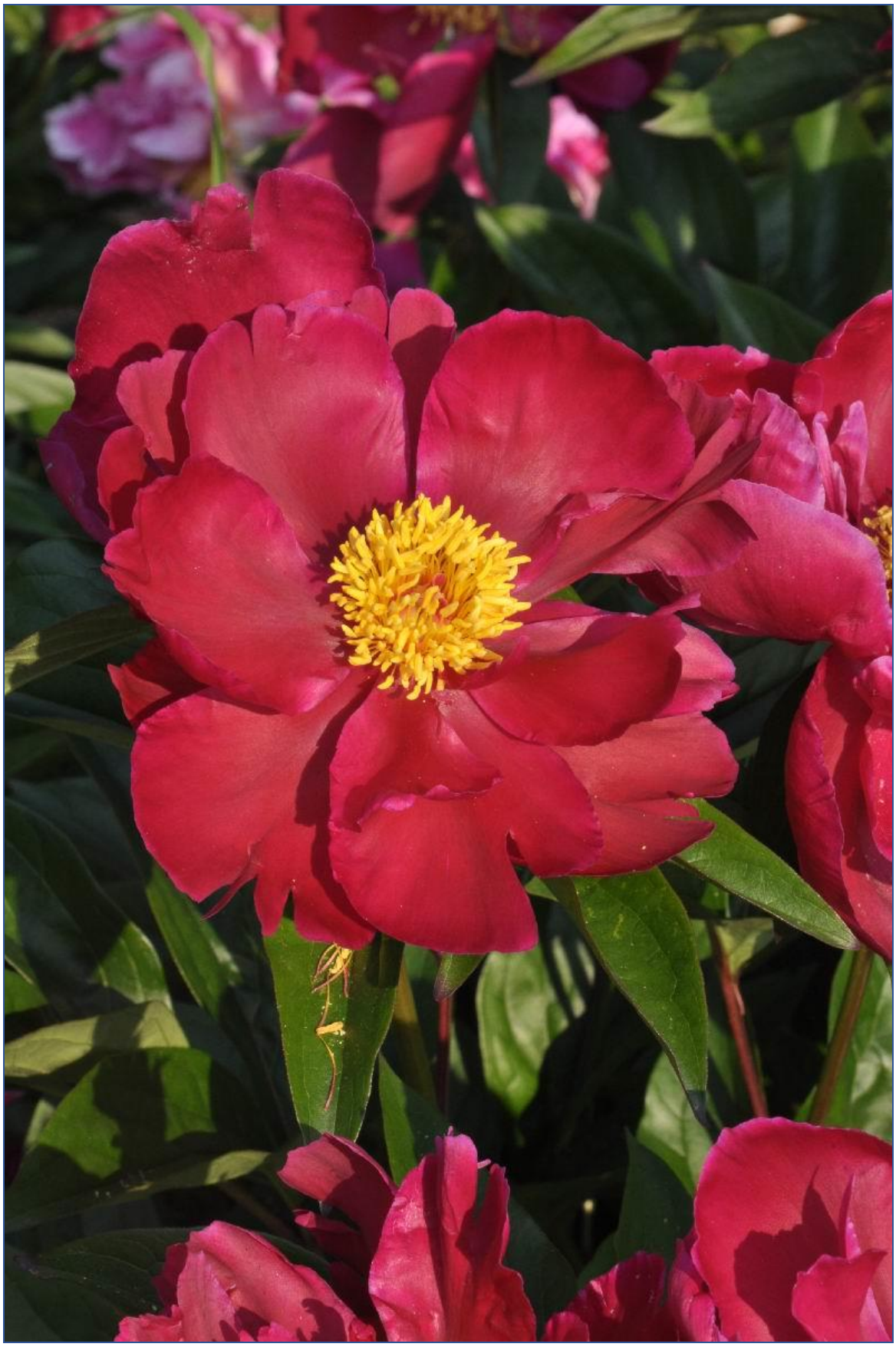
P. 'French Poppy' - above and below

All three are, with *P*. 'Noble Carmen' and *P.* 'Chlupáček, more upright growing peonies with leaves commemorating their Caucasian ancestors. They usually have only one large flower, slightly cup-shaped with tough leaves. The flower lasts, compared to other single peonies, for quite a long time.

'French Poppy' has a bright red colour recalling hybrids of *P. peregrina*; 'Czech Poppy' and 'Silesian Poppy' are pink and lighter. When blooming, 'Silesian Poppy' changes colour to a yellowish hue during flowering.

Paeonia lactiflora ‘Noble Carmen’ (CH18)

 Charity registered in Scotland SC000942 ISSN 2053-7557



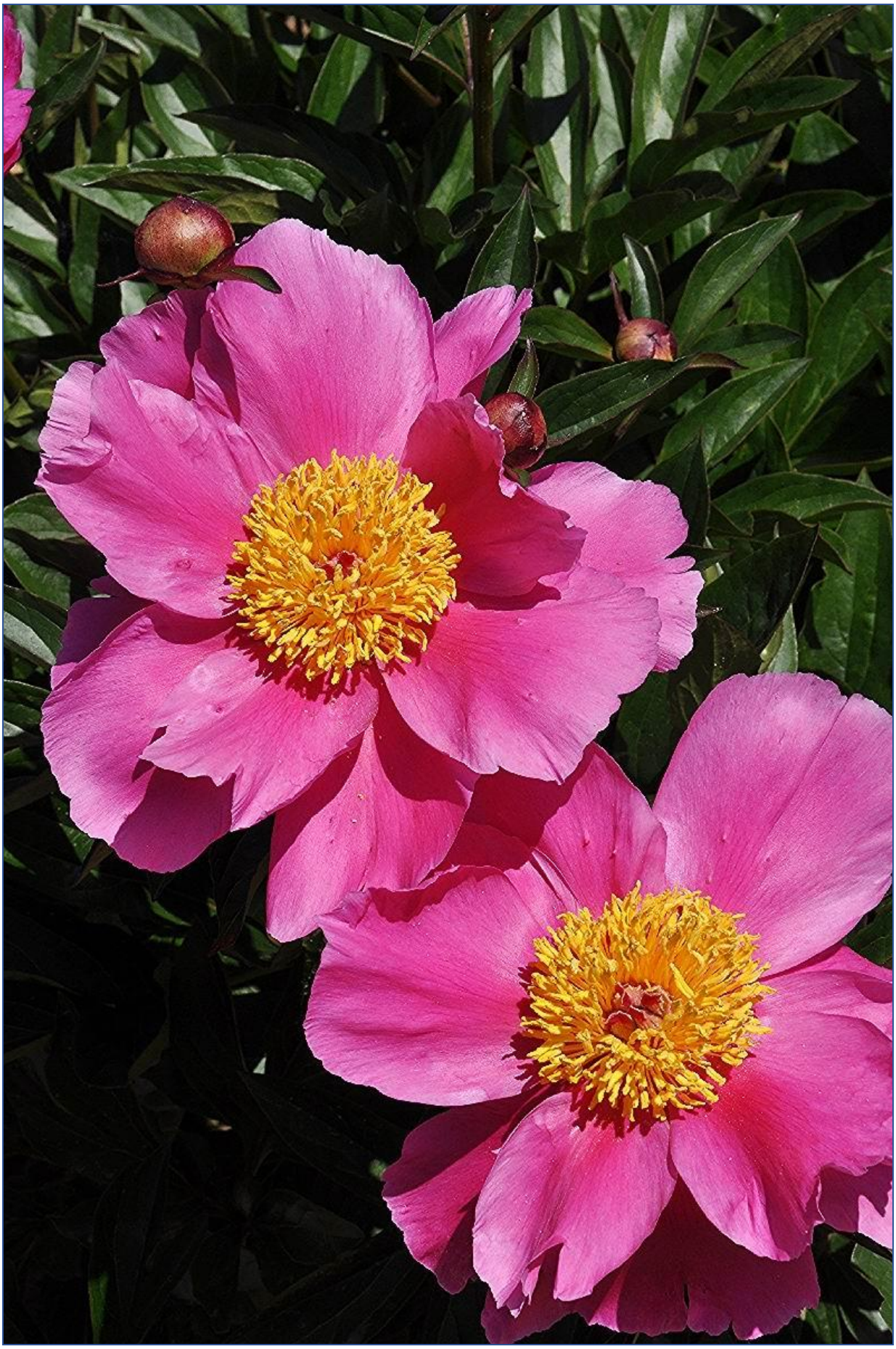
Paeonia lactiflora ‘Noble Carmen’ (CH18)

'Noble Carmen' (CH18) is a sturdy plant with large single to semi-double dark red flowers with a smaller yellow centre.

 Charity registered in Scotland SC000942 ISSN 2053-7557

Seedlings corresponding to classical varieties also came from experimental sowings of *P. lactiflora.* They were named after the Czech Empresses, wives of Charles IV:
'Blanka z Valois' – double, dark red, (seen right)
'Anna Svidnická' – single light pink,
'Anna Falcká'– single, pink, 'Alžběta Pomořanská' – red, Japanese. Of the other interesting seedlings we can name varieties 'Andromeda', a large, Japanese seedling with yellow petaloids and 'Moonlight Sonata', lower, early, semi-double, white, with crown petals mixed with stamens.

P. lactiflora 'Anna Svidnická'



P. lactiflora 'Anna Falcká'

 Charity registered in Scotland SC000942 ISSN 2053-7557

P. lactiflora 'Alžběta Pomořanská'

P. 'Andromeda'

P. 'Moonlight Sonata'

Charity registered in Scotland SC000942 ISSN 2053-7557

P. 'Chlupáček' - showing the pubescent foliage.

 Charity registered in Scotland SC000942 ISSN 2053-7557

P. 'Chlupáček' - frosty foliage and bud.

 Charity registered in Scotland SC000942 ISSN 2053-7557

In the experimental sowing there were a large number of plants called *Paeonia mascula.* This was an obvious taxonomic error. *P. arietina,* though unrelated to *P. mascula,* was long considered to be its subspecies. Because it belongs to the group of *P. officinalis,* it easily crosses with it and in gardens, a hybrid between *P. officinalis* is commonly grown under the names *P. mascula* and *P. arietina*. These plants were also sown in Průhonice. Plants are very variable in the shape of the leaves and they have one usually dark pink flower on the stem.
One seedling had thick hairy leaves. That is a character that had not been seen before in peonies. Budding plants, especially under dew, are strikingly grey. Because this one had that colouring and nice, big flowers, it was decided to register it as *P.* 'Chlupáček' ("Fluffy").
[Ed.: 'Chlupáček' translates as "Fluffy": Note that Klehm's *P.* 'Fluffy' is a different plant]

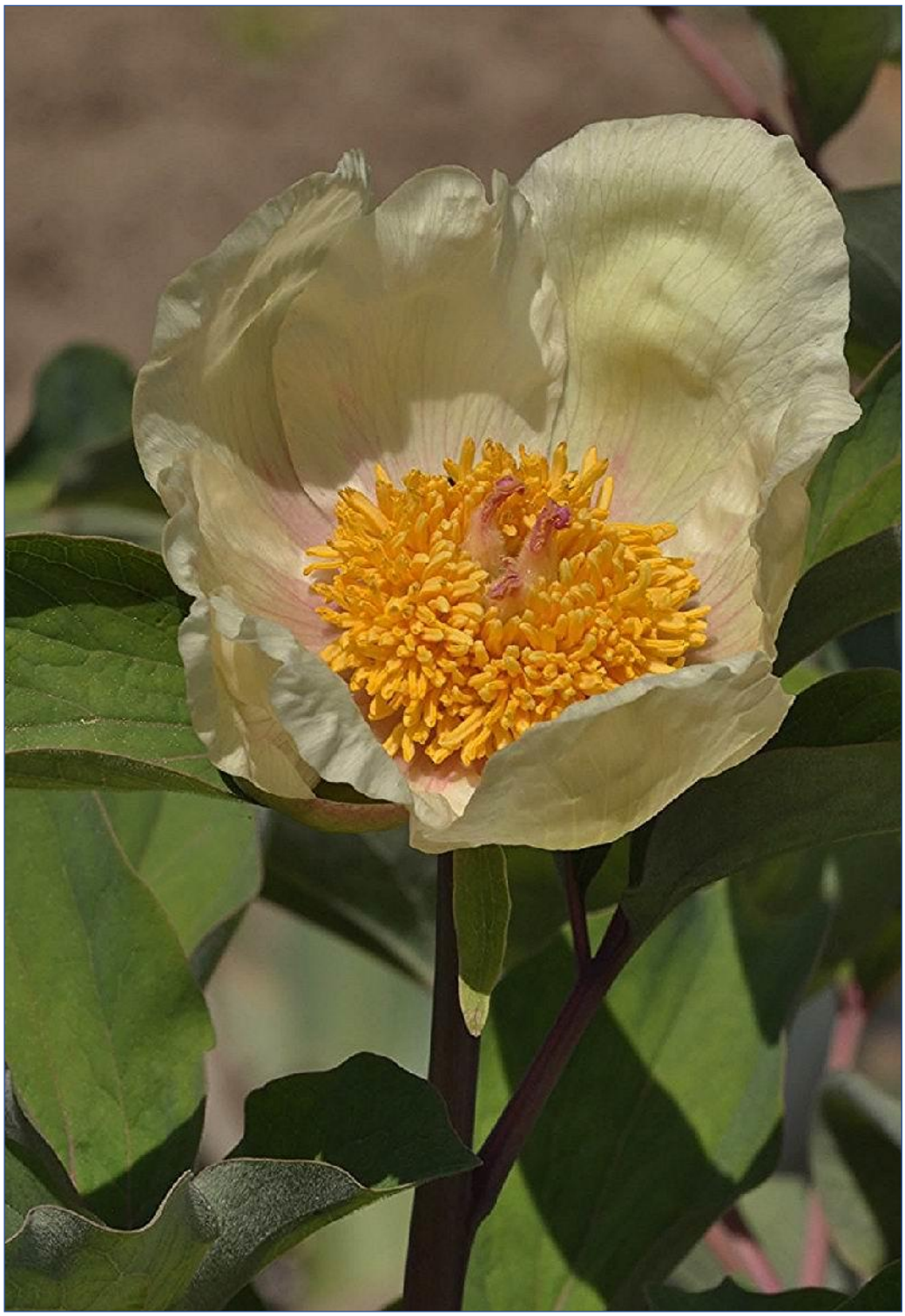
A collection of peonies was founded around 1997 in the botanical garden on the edge of Troja, by Praha. Plants served especially for the creation of open Peony meadows in the northern area and also as accessories in the Japanese Garden. Although a substantial part of plantings represent tree peonies, this article is dedicated only to herbaceous peonies.
The basis of the collection varieties from Průhonice and nurseries in Litomyšl, and a large part of them was gradually obtained by purchasing from the world's leading horticultural nurseries (Callie's Beaux Jardin, USA; Caprice Farm Nursery, USA; Kelways Ltd., England; Klehm Nursery (became Klehm's Song Sparrow), USA; Pivoines Rivière,France).

P. 'Early Caucasian'

Even before the creation of the peony meadow, the garden obtained peony seed from the exchange between botanical gardens (Index Seminum) ordered by chief gardener Petr Kosina in the early 1990s and later by Pavel Sekerka. Of course, peonies like to cross and so the resulting plants were not usually the requested species, but various hybrids. Probably the most interesting was the very early flowering seedling from the route of *P. mlokosewitschii,* which it combines yellow and pink colour and has strikingly purple-marked young leaves. It is taller and blooms before the wild *P. mlokosewitschii*. I named the plant 'Early Caucasian'. Unfortunately, the plant grew with another seedling, with similar properties, but a yellow flower.

And so the first gardeners who received plants from us actually got a mixture of these two seedlings.

P. 'Yellow Caucasian'



Gradually, however, we managed to separate the plants from each other, the second seedling was named 'Yellow Caucasian'.
The second interesting seedling was a semi-double variety from *Paeonia anomala*. Unfortunately, it is not stable in the flower and its fullness is governed by the strength of the plant. At first, we named it 'Anomala Semiplena' but because the name is contrary to the code of nomenclature, she became 'Forest Sprite'.

Plants, most likely *P. lactiflora* varieties, were obtained from Kelway.

There were a large number of seedlings on site, some had interesting dark colouring as they sprouted. The darkest coloured seedling, which held on to a deep purple colouration of the stem until the time of flowering, was named 'Trojan Black'. It has a single purple flowers. A similar, dark foliaged plant from Průhonice, which has semi-filled to fully double flowers, was named 'Salamander'.

P. ‘Trojan Black’

P. ‘Salamander’

 Charity registered in Scotland SC000942 ISSN 2053-7557

In the year when I was moving from the Troja Garden to Průhonice, I continued to cross *P. tenuifolia* and *P. obovata*. Two seedlings have already sprouted from the crossing in Průhonice. The first was smaller with elegant fine foliation, luminescent flowers with a lighter base. At the time when the first was blooming, Martin Hajman was visiting us and said " wow, that's Erotikon..." and so it has been named, after the famous Czech film of 1929. The second variety, which has a longer flower stalk and a less pronounced shape, was named after another Czech film – as 'Ecstasy'.

[Ed.: N.B. there are two older cultivars with this name: from Canada in 1926 and the USA in 1936.]

P. 'Erotikon' - parentage: *P. obovata x P. tenuifolia.*

In Průhonice I continued with another experimental crossing, plants formed from it are now under evaluation. These are mainly seedlings *P. anomala x P. tenuifolia*, characterized by single flowers and fine foliage. By crossing *P. mascula russoi* x P. 'Early Caucasian' I obtained early blooming varieties with single flowers coloured from yellow to dark pink and compact growth. Unfortunately, they suffer from botrytis. Now we have the second generation of this crossing and are trying to find seedlings more resistant to botrytis. Naturally, we carry on with crossings of dark-foliaged *P. lactiflora*.

All named varieties can be seen at the display of Czech peony breeding in Průhonice botanical garden in Chotobuz and, of course, in mixed plantings in the Botanical Garden Prague, but also in Hradec Králové and Tromso, Norway.

Paeonia lactiflora 'Cassiopaea' (CH16)

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--- More on Peonies---

From herbaceous peonies we move now to the woody types, the tree peonies as they are known. These are also popular garden plants, lending height and movement to the garden with their attractive foliage. Joe Harvey is a retired botanist and geneticist from England, where he gained his botany degrees, but living now for many years in Canada. He is Abkhazi Garden's resident botanist and Professor Emeritus of the University of Victoria in British Columbia, and one of the peonies he discusses here is one he bred to raise money for that garden. "Joe's Jottings" are wide-ranging notes on numerous peony species and their discoverers. Many of the images used in this article are from the SRGC Forum, kindly contributed by Members there.

Paeonia rockii in the Perthshire garden of Margaret and Anton Edwards.

Joseph Rock and his Peonies – Joe Harvey

The Dubious Start

Josef Franz Karl Rock (1884 – 1962) was born in Austria but anglicised his name to Joseph Francis Charles Rock when he became a US citizen. He is an example of a childhood failure becoming famous. Rock had a hard childhood in Vienna, in addition he didn't fit in at 'gymnasium' (the rigid

academic high school system) and ran away at age 17 to wander around the world. He never got an academic degree, never married.

He survived on odd jobs, eventually landing on Hawaii where he worked for the community college (now the University of Hawaii) collecting plants and preparing specimens for the herbarium (now named the Joseph Rock Herbarium) and incidentally learning six languages including Chinese.

Leprosy

At that time the Hawaiian Island were rife with leprosy ('Molokai: land of the living dead'). Who better to send on a collecting trip to search for improved strains of *Hydnocarpus wightii* than Joe Rock? The fruit of this tree is the source of chaulmoogra oil, the only cure for leprosy until the sulphones were synthesised in the 1930s. This first expedition to China was funded by USDA and was very successful, getting him publicity and contracts for further trips from groups such as National Geographic and the Smithsonian Institution.

The Choni Monastery, Gansu Province

Harvard University funded Rock's most famous expedition through the director of the Arnold Arboretum and Herbarium, Charles Sprague Sargent (third cousin of the painter J.S. Sargent). He was tasked to go to an underexplored region of northern Gansu on the border with Tibet, a particularly remote and lawless area with warlords, banditry, and fierce Buddhist-Muslim fighting. He was instructed to search for useful plants, horticultural and medicinal, to collect bird skins and take note of the folklore and medicinal practices of the people. Now, Rock had already established a home in NW Yunnan where he lived for many years among the Naxi people with the Yalong range of mountains (charmingly translated 'Jade Dragon Snow Mountain') as the background, but northern Gansu was difficult of access and he decided to make the monastery at Choni his centre. This had long been a place where students went to study Tibetan Buddhism because of its accommodation and excellent facilities including its monk-teachers, a library and a printing press.

Paeonia rockii grown from Archibald seed, JJA 4.581.500 - photo Steve Garvie.

The Prince of Choni and Joseph Rock (NGS)

Rock's Peony

Setting off for Choni in December 1924, when he arrived the particular peony associated with him was already being cultivated in gardens around the monastery complex, presumably for medicinal use. He was told that the monks had collected it in the mountains and where he indeed also found it.

Seeds and pressed specimens were sent to the Arnold Arboretum where it was named in his honour *Paeonia rockii.* I note that Rock technically only 'distributed' the species, it had been 'discovered' by the Chinese thousands of years before and the peony, mudan, the national flower of China, is used medicinally. The Arnold distributed the seeds widely and when flowers were produced the species became a sensation, everyone wanted one.

Rock's peony has very large single white flowers, each petal having a large deep purple/black blotch at the base. Indeed the first seeds distributed did have white-with-a-blotch petals and this has become the public model but later wild collections have shown that the petals may have pale or even deeper pink pigmentation, nevertheless they are still Rock's peonies.

Deep pink *P. rockii* from Phedar seed, photo Thorkild Godsk.

The Problem

Following the original seed collection, the 20th century continued on its disastrous course: there was the stock market crash of 1929, the Depression, World War 2 and the Cold War. As a result there were no more fresh wild collected seeds reach the West until the end of the Cold War. The Chinese did not permit seed collectors into the interior until after 1989. Only a few botanic gardens were able to obtain seed through seed exchanges. In gardens in the West demand continued with high prices demanded but some plants were of dubious quality and quite unlike the originals.

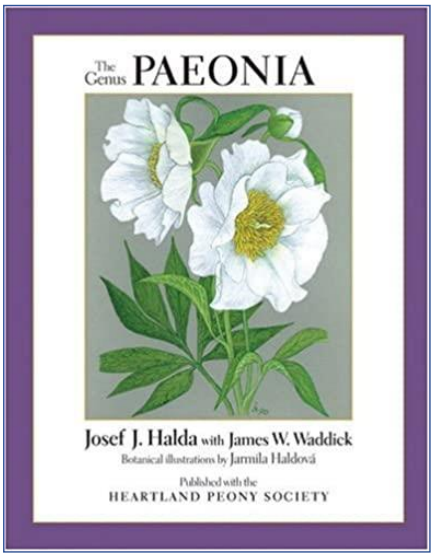
The problem with tree peonies is that propagation is difficult: cuttings are difficult or impossible to root, plants are hard to divide, grafting is difficult and seed production is often low with seeds requiring two years to germinate and several more to flower. In particular seed-raised plants tend to have rather dilute, paler blotches at the base of their petals and some of them have pink or purple petals, even though the seeds came from white-petalled plants of *P. rockii*. The explanation was not obvious until fresh Chinese seed became available.

A pale *P. rockii*, from Archibald seed.

Josef Halda

In around 1991, a friend showed me a catalogue from a Czech seed collector offering mainly alpines but including peonies which had been collected largely by himself. This was the well-known Dr. Josef J. Halda who did in fact collect in Gansu. My friend thought the prices for *P. rockii* were ridiculously

high - $1 per seed. I thought differently because if I could get one seed to germinate I would have saved $99 on a $100 plant. So I ordered 24 and this sent my gardening life on a different track. After the usual two years to allow for the double stratification that the seeds require, I got about 15 plus plants and within 5 years of sowing one flowered. I was ecstatic, it was beautiful and I looked forward to getting more seeds from it so I pollinated it with its own pollen. Disaster, not a single seed resulted but, being a geneticist, I thought, maybe this is a case of self-incompatibility. The next year two plants flowered, I cross-pollinated them and got a large crop of seeds - QED.



The Genus Peony by J.J. Halda and J.W. Waddick.

Self-incompatibility

I apologise for this rather lumpy term but it was actually invented by gardeners and came out of the fact that the royals and nobility (think Louis XIV) of Europe did not eat apples (peasant food), but had to have the finest pears. The traditional pear trees will not set fruit alone but have to have another cultivar nearby for insects to transfer pollen between them. (Modern cv. 'Aurora' is self-compatible). This explains the 'degeneration' of *P. rockii* stocks over the latter half of the 20C. With expensive plants one usually purchases only a single specimen. This automatically means that any seed it produces is the product of pollen from another tree peony which is likely to be from a nearby specimen of one of the cultivated hybrids. Yes, the seed may be from a *P. rockii*, but the pollen parent is something else. Hence you have a hybrid. From a biological point of view this is a system to prevent inbreeding.

One Species or Two?

The seldom mentioned secret is that Rock's peony comprises two distinct species distinguished by their morphology and, I gather, by their geography. I present the case for recognising two species.

Availability of Reliable Material

Part of the problem has been the lack of authentic specimens for comparison purposes. As explained in Part 1, the nature of the breeding system – self-incompatibility – has confused the horticultural situation by automatically generating random hybrid seedlings in garden settings unless the flowers are hand-pollinated in a controlled manner with pollen from another seedling of the same species. Unfortunately seedlings from open pollinated flowers have been distributed under the name '*P. rockii*", either from ignorance or crass commercialism. Because of this it has been my aim to distribute only hand-pollinated seed over the past many years.

The Basal Blotch

A conspicuous black-purple blotch (flare) at the base of each petal is the most immediate visual characteristic of both species. Only when vegetative features are taken into account is the distinction clear. The two differ in their growth characteristics and appearance in the garden and horticulturalists should be aware of these differences.

The Names Given to the Species

The scientific nomenclature of the tree peonies is a rat's nest of confusion (see Carston Burkhardt's Web Project Peonies). So, I have simplified life by continuing to use the names under which I received the initial seeds which, it turns out, may be the ones which are eventually adopted. For confirmation I turned to the on-line Flora of China, which hints that I may be using the names in the reverse sense. But this would be completely unimportant since my aim is to point out that there are two distinct entities.

From the wide choice of names I am using *Paeonia rockii* and *Paeonia linyanshanii* ('of Linyan Mountain'). The name linyanshanii has not been officially adopted at the species level but is validly published as *P. rockii* subspecies *linyanshanii*. I favour the upgrade to full species and so use it here.

Leaf Differences

A brief perusal of the literature will show that among the tree peonies as a whole, leaf characteristics are used to separate the species, so there is nothing unusual in doing this for the two 'Rocks'. Flower characteristics are of lesser importance in classification, which of course is the exact opposite of the horticultural situation.

Both species have large highly divided compound leaves differing in the average number of leaflets and the presence of lobes/teeth. (Average of three large leaves)

P. rockii ……34 leaflets, about 120 teeth/lobes

P. linyanshanii 26 leaflets, about 0 – 2 teeth/lobes

In a garden setting it is easier to examine the terminal leaflet of a leaf: P. rockii has mostly broad, 3-lobed terminal leaflets: *P. linyanshanii* has ovate-lanceolate terminal leaflets, rarely lobed.

Perules

As the oldest science, botany had accumulated a farrago of obscure and arcane words, among which 'perule' is one of the least used, indeed I know of no other use for it.

A perule is a bud scale protecting the exposed overwintering bud. The distinction is that they do not simply drop off as the stem elongates in spring but persist, may even expand and become photosynthetic.

P. rockii – perules mostly not expanding, turning brown, rarely one may grow to 1cm.

P. linyanshanii – perules expanding up to 3cm long by 1.5cm wide, turning pale green.

Dried remains of the perules remain on the stem indefinitely and can be seen marking the annual

resumption of growth. It is remarkable when one is growing plants that the perules are highly evident but are neglected by the authors writing about them in the scientific literature. The reason for this lies in the nature of herbarium specimens which are the basis for making scientific descriptions, writing floras and identification keys.

When preparing specimens of plants for study, they are dried between blotters. In the case of tree peonies frequently only leaves and flowers are included. On specimens with the stem included its thickness prevents the perules from contacting the blotters, they shrivel to insignificance – whence their omission from scientific accounts.

Recognition of Species and DNA Analysis

Molecular studies is proving extremely useful in studying puzzling groups of species, allowing for estimates of the degree of separation within groups. Obviously in the case of the *P. rockii-linyanshanii* pair we have closely related but distinct species. Within the tree peony group it is still not settled how many species there are, even though many are now rare in their natural habitats. While molecular studies can produce degrees of separation it cannot state that two plants belong to separate species, only a taxonomist can do that. The concept 'species' is man-made and impossible to define for all situations, with one exception, which I used to tell my students. This is the Absolute Definition of species: A species is any group of organisms so designated by a competent taxonomist. In our current case *rockii* and *linyanshanii* differ in a sufficiently large number of characteristics that they clearly belong to separate species. The Absolute Definition is a botanical joke with a large pinch of reality.

Horticultural Comments

Rhizomes

In the mid-1990's I donated three small seedlings grown from wild collected seed to the Abkhazi Garden. Their fate is instructive. They were planted in a row along a path about 3ft apart. One was overgrown by a perennial and died, another grew too large for the site and was moved, the other remained in its original place.

By 2020 the one that was moved had reached about 2ft wide by 4ft tall. The unmoved one was much larger at about 10ft wide and 6ft tall (and quite spectacular when flowering). The two sites are not identical but I have had similar results in my own garden.

When grown from seeds the seedlings develop a single tap root which continues to burrow down when they are planted out. The benefit of this is that after a few years the roots are sufficiently deep down that they become 'bomb-proof', rendering the plant resistant to damage or drought and very long lived.

Severing the tap root on a mature plant causes severe damage which may take ten or more years to repair. This makes the choice of the initial site more important than realised in normal gardening

where plants are commonly moved around as they grow. It takes nerves of steel to choose a site 10ft in diameter for a seedling a foot tall.

Stems

Old tree peony plants become leggy which is how they compete in nature but may be regarded as unsightly in a garden. My experience of cutting down stems is exactly the opposite of that with rhizomes. Do not hesitate to cut a leggy plant down to the ground, regrowth is rapid and the shape is improved, although a couple of years bloom may be lost

Which is better: *rockii* or *linyanshanii*?

When the two are grown side by side *linyanshanii* shows greater stem growth and has larger flowers. This is commonly interpreted as being 'better'. In truth both make superb shows.

Conservation

Tree peonies in their natural habitats in China are in danger of extinction. Other species exist which I feel would be valuable in horticulture either in their own right or incorporated into modern hybrids. I do not condone collecting more wild plants but those in cultivation are not being offered even in specialised nurseries. I sometimes wonder whether the simple knowledge that they may be self-incompatible and thus require hand pollination between separate seedlings could revolutionise their availability in the same way that I have made *P. rockii* widely available, at least in Victoria.

Joe Harvey with *P.* 'Abkhazia Princess'

‘Abkhazi Princess’, a new vigorous tree peony hybrid grex

The Parents

When flowers of *Paeonia rockii* are hand pollinated with pollen from *P. linyanshanii*, an abundant crop of seeds results. The two parents jointly form Rock’s peonies currently recognised as subspecies: *P. rockii* subsp. *rockii and P. rockii* subsp*. linyanshanii,* but as previously mentioned I am encouraging their elevation to full species status as *P. rockii* and *P. linyanshanii* on the basis of strong differences in leaflet shape, perules and flowers.

The Abkhazi Garden

The Abkhazi Garden in Victoria, British Columbia is owned by The Land Conservancy, a charitable organisation, and maintained by volunteers. The garden has a historic back-story that must be the envy of most public gardens (Katherine Gordon, A Curious Life). It was created from a rocky outcrop by Prince and Princess Abkhazi – he from the country of Georgia, she born in Shanghai, China of English parents.

Prince Nicholas and Princess Peggy Abkhazi - photo Phillipa Proudfoot.

A volunteer, Carol Dancer, suggested calling the hybrid **‘Abkhazi Princess’**, which is appropriate since the tree peony – mudan – is the national flower of China and Peggy Abkhazi was born there. Plants of the hybrid are sold at the garden.

Registering the name ‘Abkhazi Princess’

I was urged to register the name ‘Abkhazi Priness’ through the registrar of the Canadian Peony Society although I pointed out a problem not appreciated by most gardeners. Nevertheless I sent in an application and, as expected, received a courteous reply informing me that the plants we produced did not qualify as a cultivar since, each being a separate seedling, they constituted a ‘grex’ not a cultivar.

Cultivar versus Grex

Cultivar is the contraction of ‘cultivated variety’, further abbreviated ‘cv’, and is used for variants of plants produced in a garden, as opposed to something found in nature which is a ‘variety’, abbreviated ‘var’, or even ‘v’.

All plants with a particular cultivar name must be genetically identical (a clone) and hence are propagated asexually by means of cuttings, grafts, divisions or tissue culture.

Grex (Latin: flock, band), a group of seedlings with the same parents but differing somewhat in their genetics as would be expected among sisters or brothers. Thus 'Abkhazi Princess' is a grex.

Limiting Variation among 'Abkhazi Princess'

I attempt to limit the amount of genetic variability among 'Abkhazi Princess' seedlings by using the same parental plants each year. The seed parent is a large *P. rockii* by the lower lawn at the Abkhazi Garden and the pollen parent was a plant of *P. linyanshanii* until that died at which time it was replaced by a sister seedling.

I chose white-petalled parents (with black flare) because this is what the public has come to expect of Rock's peony. This may be misleading because among my wild collected Halda seedlings are several pink forms, each one a pure *rockii*, which is defined largely on non-floral characteristics. Despite using the same parents, every now and then a seedling of 'Abkhazi Princess' crops up with a pale pink ground colour. That is what a grex can do, these plants are still 'Abkhazi Princess'.

The unfortunate thing about the 'grex' designation is that any cross anyone wishes to make between any specimens of *rockii* and *linyanshanii*, will bear the name 'Abkhazi Princess'. We cannot control what other people do although at the moment we are probably the only group currently producing such crosses.

Peony Propagation Problems

Gardeners must be wondering why we don't just grow our 'Abkhazi Princess' plants from cuttings? After all, with seeds there is the fuss of controlling the pollination, a couple of years for their unusual germination plus at least three years to size up – a minimum of six years! Unfortunately, tree peonies have their own set of problems.

Division of the rootstock is extremely slow and damages the rhizome.

Grafting is skilled work with the bulk of the commercial grafted plants coming from Japan.

Tissue Culture is technically beyond our capabilities.

Cuttings may possibly work. I tested rooting a cutting of a different hybrid under the intense light of one of my "Joe's Cutting Cookers" (a home-made heated area for cuttings) and roots formed. However, in winter the dormant bud looked soft and there was no true rhizome. I suspect the timing when the cutting is taken is critical. I shall try to refine the technique, but peonies are notoriously difficult from cuttings.

Hybrid Vigour

Hybrid vigour (heterosis) is the tendency for hybrids to grow more vigorously than their parents. This is exploited commercially and the US corn crop is dependent on the phenomenon as are most vegetables. (The opposite phenomenon occasionally occurs; I have tiny seedlings of *Helleborus niger* x *vesicarius* sitting without showing any signs of flowering).

There are no plants of 'Abkhazi Princess' of substantial age but annual stem extension is greater

than the seed parent which is maybe 25 years old and 6 feet tall. I confidently predict that the hybrid grown under similar lush conditions could reach 12 feet in a similar time.

A cautionary tale is that I planted an early seedling in a planter left as a gap in a paved patio. The vigour surprised me and with a maple overgrowing the site I dug it up damaging the rhizome as I did. Despite a better site the plant is half the size it was and has been sulking for several years. Be warned, expect a much larger plant then a normal commercial tree peony and choose its 'forever' site on the initial planting.

Hardiness

I was initially under the illusion that tree peonies are delicate plants requiring the mild climate of Victoria, British Columbia (about US Hardiness Zone 8). I was amused that one of the volunteers sent a plant to Thunder Bay, Ontario – a waste of time and money, I thought. It flowered! There are now plants growing in Calgary, Alberta; Winnipeg, Manitoba; Ottawa, Ontario and near the St. Lawrence, Quebec. These are Zone 3 or 4 sites. Some winter protection may be provided, but they grow. This no Princess and the Pea.

Paeonia 'Abkhazi Princess' a cross of *P.rockii* x *P.linyanshanii* - photo Joe Harvey.

Joe Harvey's Jottings: The Tibetan Tree Peony - *Paeonia ludlowii*

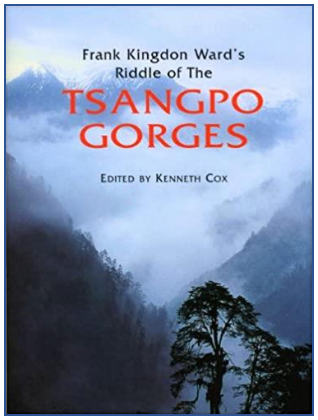
Hate is not an emotion that I normally, or ever, express but my dislike of the yellow Tibetan tree peony comes pretty close to it and yes, I know that there are many YTP lovers out there. Indeed, if it were the only tree peony in existence it would be wonderful, but there are so many better ones that I despair when I see it.

I should make it clear that I am discussing the vigorous, tall-growing yellow tree peony, there are other yellow tree peonies but the Tibetan one is confined in nature to a relatively small area from where it was introduced to the West in 1937. But first, who was Ludlow?

Frank Ludlow (1885 – 1972) born in Chelsea, took botany from Marshal Ward, father of Frank Kingdon-Ward, then taught English and Biology at Sind College, Karachi and in World War 1 was a Lieutenant in the Deccan Infantry. He retired from education in 1927, settled in Srinagar, and proceeded to travel extensively in the Himalayas. In 1929 he met Major George Sherriff, originally from Scotland.

George Sherriff (1892 – 1967) from Scotland, was of a like mind with Ludlow in terms of exploring the Himalayas. The two became great pals and made a series of expeditions between 1933 – 1938 collecting specimens for museums and seeds for sponsoring gardens.

Frank Ludlow, George Sherriff, an unidentified Tibetan, 'Eliot' and Betty Sherriff. (photo RBGE)



Tibet held a fascination for Europeans at the time, it was largely closed to Europeans with an administration extremely suspicious of foreigners. In addition, the terrain was difficult to traverse because of roaring rivers and steep valleys.

There is little doubt that they were interested in Tibet because of the publication in 1926 of the account of the Frank Kingdon-Ward and the Earl of Cawdor 1924 expedition, under the title The Riddle of the Tsangpo Gorges. This is still one of the best travel books ever written and was re-issued, updated, by Kenneth Cox, 2001.

The Tibetan Peony was found growing in and around villages, especially in the hedgerows surrounding fields. Its association with people implies some degree of cultivation and peony roots of various species are used medicinally.

In cultivation the Tibetan peony is a vigorous plant that in the mild climate of Victoria, British Columbia can grow 10 feet tall with yellow flowers up to 4 inches diameter. When grown in the open under stress conditions the flowers can be well displayed, but my quarrel is with plants grown under soft conditions of shade, with ample nutrition and moisture. Under these conditions the luxurious spring foliage develops a yellowish-green colour which envelops and hides the not so dissimilar yellow flowers in the interior of the plant. The display lacks oomph.

The technical distinguishing features of the Tibetan peony include the yellow flowers bearing only one or two carpels and containing the largest seeds of any peony. The flowers are self-fertile, seeds are abundantly produced and readily germinate. I complain that this leads to an excess of specimens in gardens, taking up space that could better be used for other peonies.

One good thing about *P. ludlowii* is that it has contributed yellow genes to some of the hybrid tree peonies. The Lemoines and Saunders used its pollen producing such famous old cultivars such as ‘Alice Harding’, and ‘Chromatella’; later hybrids such as the semi-double ‘Age of Gold’ have less over-weighted flowers.

Frank Ludlow donated his collections to the Natural History Museum, London. He was especially fond of birds and contributed over 7000 specimens. Two birds, a hedgehog and *Paeonia ludlowii* are named for him.

Paeonia “ lutea” - photo Trond Hoy.

The Perfect Yellow Wild Tree Peony – Potanin and Delavays’ Discoveries

Yellow is such an eye-catching colour in peonies that there is always a demand for them. My first tree peony was a mail-order ‘Age of Gold’ back in 1970’s Halifax; that one is a hybrid deriving its yellow from the Tibetan yellow peony, *P. ludlowii*, dealt with previously. Here we consider the other half of the Delavayanae – the small-flowered wild tree peonies.

Jean Marie Delavay (1835-95) was born in Les Gets, Haute Savoie, France, entered the priesthood and became a missionary to China initially based in Guandong province where he started collecting pressed specimens of the amazing plants he found in his travels.

While in Guangzhou (Canton) he met another keen plant collector, the Brit Henry Fletcher Hance who was departing for England and said, since he was visiting the British Museum (now the Natural History Museum, London), he would be honoured to deliver Delavay's specimens also (where they may still be examined).

A few years later Father Delavay, on leave in Paris, met the older and already famous Father David Armand who chided him for giving such interesting material to the English (!), and introduced him to his friend Adrien.

Adrien R. Franchet was Director of the Natural History Museum, Paris who, in subsequent years, was to receive an incredible 200,000 plus specimens from Delavay by now based in NW Yunnan, and from which he would describe over 1500 new species – surely this should be a Guinness World Record?

A small, very dark red *P. delavayi* flower bud - photo Margaret Young.

Paeonia delavayi was the name that Franchet gave in 1886 to a small tree peony to honour the collector. Most gardeners know this plant but "it don't get no respect" because it usually has small deep red flowers which visually get lost against the background and hence is usually ignored.

Grigorij Nikolajevic Potanin (1835-1920) was born near Omsk, Siberia and believed passionately that Siberia should become an independent republic. Unfortunately the Czar disagreed and Grigor got five years hard labour but typically, wrote a history of Siberia during 'free time' in his cell. Potanin was one of those passionate, over-active people who just kept on doing things: he was a co-founder of the first Siberian university (Tomsk), travelled widely through the central Asian republics, often with his wife (unusual at the time), studied the steppe languages, made ethnographic collections, collected plants, animals and minerals eventually getting into northern Yunnan. His plants were sent to Leningrad where Komarov did not get round to naming a small peony *Paeonia potaninii* in his honour until 1921, the year after Potanin died.

Paeonia potaninii colour form – David Millward.

Potanin's Peony is similar to Delavay's but generally makes a better garden plant since in addition to red shades there are orange, yellow and white flowered forms. I got seeds of *P. potaninii* through NARGS, two germinated and I gave one to my friend Carol. Both plants flowered with attractive coppery-orange flowers borne in 3-flowered cymes which extends the flowering season since the flowers open in succession. Both plants are well-behaved upright specimens without the annoying habit of spreading by underground stolons shown by some collections and make excellent garden plants. Unfortunately, neither plant produced any seeds in the first year of flowering but, suspecting self-incompatibility, the next year I got a flower from Carol's plant to use to pollinate my specimen and seed was produced in abundance –QED. By contrast the usual deep red flowered form of Delavay's peony is self-compatible, hence seed is abundant, and plants are consequently common in gardens.

Paeonia potaninii ex ACE 1047 – photo Gail Harland.

Yellow Potaninii. The most desirable garden form of Potanin's peony is the yellow-flowered upright one. Finally a nursery supplied a yellow one but it was short and had an extensive underground creeping network – not right – I despaired. Then a quirk of genetics happened: one of the seedlings from the orange form flowered yellow – happiness! – but it is self-incompatible so cannot produce seeds by itself – despair! There is a workaround, it just takes a few years.

The Conclusion. Now that the group has been studied for well over 100 years some conclusions about the Delavayanae have been reached and that is that in the group as a whole there are only two biological species.

1. *P. ludlowii*, the Tibetan Yellow tree peony. Genetically this is an oddity in its restricted genetic variability, restricted distribution and association with field edges and gardens. It may owe its survival and/or origin to humans (compare corn).
2. *P. delavayi*, Delavay's peony. A complete contrast to *P. ludlowii* in that it has a wide distribution in the wild, a vast range of genetic forms resulting in plants with or without stolons, tall or short stems, self-fertile or outcrossing, with almost black, red, orange, yellow or white flowers with or without red flares on the petals.

What happened to Potanin's peony? Once it was realised that there was only a single variable species the Rule of Priority meant that the oldest name (1886) took precedence leaving *P. potaninii* (1921) as a junior synonym, but Potanin is still my favourite revolutionary and my orange and yellow peonies I call *P. delavayi* Potanin group.

The other question is where does that leave *P. lutea*? That name has been applied to both biological species and its use is so mixed up that biologists call it a nomen confusum – just forget it.