GREAT LAKES CHAPTER

North American Rock Garden Society

SPRING NEWSLETTER, MARCH 2008

CALENDAR OF CHAPTER MEETINGS ** meeting details below**

****SATURDAY, APRIL 5: SPRING MEETING**

MEETING:	**1:00 PM – ca. 3:30 PM**
PLACE:	**Matthaei Botanical Gardens**
BUSINESS MEETING	**1:00 PM**
PROGRAM:	**1:15 PM**
	Tony Reznicek:
	Alpine & Mountain Plants in Western China

****SATURDAY, MAY 10: SPRING GARDEN TOUR AND PLANT SALE**

MEETING:	**10:30 AM – ca. 3:30 PM**
PLACE:	**Ginger & Phil Lisik's and Fred Case's Gardens (see map insert)**
	10:30-ca. NOON see Ginger & Phil Lisik's garden
BAG LUNCH:	**ca. NOON at Fred Case's**
PLANT SALE:	**1:30 at Fred Case's**

MARK YOUR CALENDARS:

Saturday, September 20: Our Fall Meeting and Plant Sale will be at **Libby & Michael Greanya's** and **Clarence Owen's** Gardens.

Saturday, October 4: We will have a Rock Gardening Workshop focused on construction and soils at **Tony Reznicek's** garden in Ann Arbor.

DETAILS WILL BE IN THE FALL NEWSLETTER

UPCOMING NATIONAL MEETINGS – see below and your Quarterly for details.

Eastern Winter Study Weekend hosted by Berkshire Chapter, Farmington, Connecticut 28-30 March 2008

NARGS Annual Meeting hosted by Ottawa Valley Chapter Ottawa, Ontario CANADA 12-15 June 2008

From the Chair…….

Thank you to all who came to our first meeting of 2008. Our speaker, Maria Galletti, showed us many great native alpines from Newfoundland [meeting notes will be in the Fall Newsletter]. She certainly added many must have plants for those who attended. If you made it for the potluck you know there were lots of tasty delights. For those of you that couldn't make it you missed Esther's homemade jam. YUM!

Jacques Thompson has agreed to be vice-chair. Thank you Jacques. Please contact me or Jacques with any questions or desires, concerns or ideas to help get the most out of your membership. Are there certain speakers you want to hear, gardens or areas you wish to visit, are there techniques you want to see or learn? Let us know.

Speaking of techniques, we are putting together a rock garden building workshop for this fall. Look for more details soon. We are also checking into bringing in a load of tufa from Canada. If anyone is interested let me know. I'll tell you about sizes and pricing.

The NARGS Seed Exchange has informed me that seed donations in number of species (especially alpines) and total seed per species was down again last year. The seed exchange is a vital part of NARGS. I urge you all to donate [not a NARGS member? The Seed Ex is just one of many good reasons to join!]. This is a worldwide seed exchange so even common alpines and other interesting or unique plants in the US are coveted by others around the world. Share your plants. Please take some time to collect your seed and send it in.

Spring is coming and so is our plant sale. Don't toss plants you have that are extras or have self-sown in your paths into the compost. What you may consider common in your garden because it grows so well for you (hint: Dick) may be a new find for the rest of us.

A final note – our organization has many very talented growers with fine gardens. Please try to come to the meetings and share your knowledge with the rest of us. Also bring along those friends or newbie's that you have found lurking in your garden. They will be the future of our group.

P.S. Cliff and Jan we miss you.

John Serowicz

Oct 10 2007 Meeting – Jānis Rukšāns
by Laura Serowicz

The October 10th, 2007 meeting featured two talks by Jānis Rukšāns, Latvian nurseryman, Bulb expert and author of *Buried Treasures, Finding and Growing the World's Choicest Bulbs*. His first talk was titled "**Bulb Belt of the USSR**." Since Latvia was part of the former USSR, Jānis had access to many areas behind the Iron Curtain that Westerners did not. He had many adventures collecting and propagating the bulbs he found on his travels, which he details in his book (described as a combination of a spy thriller and the best book on bulb growing ever written). In these notes I concentrated on the information he gave on the various species of bulbs he grows. I highly recommend reading his book for more of his many adventures while bulb hunting in the former USSR.

There are two *Anemones* native to Latvia which are his favorites, they can grow side-by-side but normally bloom at different times. Occasionally the white *A. nemorosa* may be blooming later in the shade and the yellow *A. ranunculoides* earlier in the sun and they may hybridize to produce an intermediate (often offered as *A.* ×*seemanii*). Not long ago in Estonia, Jānis found a double white form of *A. nemorosa* which stays double-flowered that he named 'Kassari'. *A. nemorosa* 'Swedish Pink' was spotted by Arnis Seisums amongst white *A. nemorosa* while driving through a forested area near the Gothenburg Botanical Garden with Henrik Zetterlund and Jānis. Several double-flowered forms of *A. ranunculoides*, 'Children of Chernobyl' were found a few years after the Chernobyl disaster in Estonia. *Anemone caucasica* and an isolated form of *A. blanda* – 'Enem' grow side-by-side in north Caucasus. *A. caucasica* has much smaller flowers and the tubers are only pea-sized so it must be increased by seed. It usually has only blue flowers, but in one location Jānis found both blue and white.

One of the first bulbs Jānis collected was *Corydalis solida*, a Latvian forest native with a muddy bluish-purple color. After many years of looking, he finally spotted a white-flowered one growing among the blue – very compact, abundant bright white flowers and blooming earlier than other whites– that he named 'Snowstorm.' The second different *C. solida* he spotted was in a friend's orchard, a soft pink-flowered compact form which he named 'Blushing Girl'. Later, he introduced many other color forms into his garden from varieties which grow in Russia and they have interbred very well, giving him many new color forms not seen in nature. There are now many varieties of *C. solida* including: 'Anne-Marie' white with purple at the tip of the lip, 'Falls of Nimrodel' orangish-red-pink and white lips, 'Gunite' bright pink with white lips, and 'Latvian Zwanenburg' bright red with just a hint of white in the throat. One of the rarest *Corydalis* in the world, *C. gorinensis* is known only from one half a square kilometer in Siberia on a hillside surrounded by bogs and muck and can only be reached by boat. It is a difficult plant because it comes out too early and gets damaged or killed by late frosts and in the greenhouse it is too hot and dry. It has beautiful golden yellow flowers and unique, finely divided leaves. *C. magadanica* is similar in leaf shape, but with white flowers, grows in sandy soil, and flowers a little bit later so is a little easier to grow. The brightest blue one is *C. fumariifolia* from Sakhalin Island, again it comes up a little too early.

When Jānis first started traveling looking for bulbs, he began in the Carpathian Mountains which straddle eastern Czechoslovakia, Hungary, Romania and Ukraine. The first plant he met there was *Leucojum vernum carpathicum* which covered the meadows like snow. They grow in very hard clay, but fortunately they often grow near streams and so he would walk along the stream edge and find handfuls of bulbs that had been washed clean by the stream. The plant that he was looking for in the Carpathians was *Crocus heuffelianus*, one of the best crocuses he knows and one of the hardiest. The last winter was very hard for him with a February thaw and then two weeks of -30 ºC [-22 ºCF] with no snow cover, and almost all his crocus collection grown outside was killed by frost. One survivor was *C. heuffelianus* which didn't suffer at all, possibly because it flowers a little later. Among the other species surviving were *C. malyi*, one form of *C. korolkowii* and *C. cvijicii* from Yugoslavia. During his first trip to the Carpathians he spotted one single plant of the normally

purple-flowered *C. heuffelianus,* unusual in having beautiful white petals with dark purple marking near the tips, named 'Carpathian Wonder'. One of the most gorgeous autumn-flowering crocuses, *C. banaticus*, also grows in the Carpathians. It is most recognizable, the inner petals much smaller than the outer petals, normally purple-flowered but there are white forms, 'Snowdrift' is the most beautiful. The bright lilac-blue *Crocus reticulatus* from Bessarabia is one of the most beautiful forms of *C. reticulatus*, a spring flowering, excellent increaser that often has 7-8 flowers from a single corm. In Crimea grows a close relative, the golden yellow-flowered *C. angustifolius* which has deep purplish-brown stripes on the back of the outer petals. He gave many seeds to Leonid Bondarenko from Lithuania, who has selected out several forms which showed hybrid vigor and were excellent increasers. Some selections make 15-17 blooms from a single corm. On the Crimean peninsula are two other crocus species, one of the forms of the autumn flowering *Crocus speciosus* Jānis collected there is his earliest form and flowers for him in early August. *C. tauricus* is the other Crimean crocus, it is very beautiful and distinct. Further east into the Caucasus meadows turn white with *C. vallicola,* another beautiful autumn-flowering crocus, which needs full sun and soils that are slightly wet year-round, easy to identify by the very long tips of the petals. One of the most unusual, difficult to grow, autumn-flowering crocuses is *C. scharojanii* with yellow blooms and grows in very wet meadows. He grows it in large pots put in shallow trays of water so that the soil always stays wet, and also treats *C. scardicus* and *C. pelistericus* this way. One of the most beautiful and most difficult of three crocuses from Central Asia, *Crocus michelsonii* has variable dark to light shades of bluish-violet, all with a deep blue throat. It grows in very hard clay in open areas. Further to the east is the second Crocus from Central Asia, *C. alatavicus* which is a little bit easier to grow than *C. michelsonii.* The third crocus from the area, *C. korolkowii* is much easier to grow. It is very variable depending on the place it grows, in some areas it is very uniform and in others each clump is different.

A couple more of so-called 'Children of Chernobyl' were collected by Henrik Zetterlund on Gotland Island in Sweden 6 or 7 years after Chernobyl. Henrik started seeing mutations on *Fritillaria meleagris* in color and flower shape, including a white form with purple stripes on the outer petals which Jānis named 'Henrik' and also a double-flowered checkered form. South and east in Ukraine, *F. meleagroides* (often misnamed *F. ruthenica*) grows along forest edges. We saw a greenish-yellow form, white forms, as well as the normal reddish-checkered form. *F. ruthenica* differs from *F. meleagroides* in that it has tendrils at the top of its stem, which it uses to hold itself upright in shrubs and prevent strong winds from breaking its stem.

Most gardeners think of *Ornithogalum*, as the terribly weedy Star-of-Bethlehem, *O. umbellatum,* which spreads prolifically via bulbils, or the slightly less invasive *O. nutans*. There are many beautiful forms of *Ornithogalum* which are not invasive, including *O. orthophyllum* from Bessarabia and a form of *O. nutans* from Turkey. *Ornithogalum ponticum* 'Sochi' is a tall growing summer bloomer, named (as many of his introductions are) for the place where he found it, near the Russian Black Sea city of Sochi. Also found in Crimea is a very floriferous *Ornithogalum fimbriatum*, with fine hairs on the edge of the leaves, very beautiful in early mornings with dew drops on the each hair tip.

Sternbergia colchiciflora can be grown outside better than other sternbergias. The leaves come up in spring avoiding winter damage which would otherwise weaken the plant. *Sternbergia fischeriana* is one of two spring flowering sternbergias, known from several locations in Armenia, Turkey and north Syria. White-flowered *S. candida* is the other spring bloomer, common in gardens but rare in nature, and a good increaser.

Various snowdrops grow in Crimea, but only *Galanthus plicatus* could be called giant snowdrop for the great size of its flowers and leaves to 35-40 cm [14-18"] long; excellent growers in a slightly shady garden in well-drained peaty soil. Another large snowdrop *Galanthus platyphyllus* is unusual in that it grows in full sun in wet meadows and must be planted deeply. A population of *G. platyphyllus* from in Republic of Georgia has a lot of variation in the flowers.

One of the rarest *Cyclamen, C. kuznetzovii* [sometimes considered a form of *C. coum*] is found only in a very small, protected forest area of the southern Crimean peninsula. Jānis received hand-pollinated seeds of it from a Dutch grower, sowed them in a seed box and when they did not germinate after three years, he put the box aside, thinking that they would not germinate. Suddenly after five years, the box was full of tiny cyclamen seedlings, so now he keeps his seed boxes, especially of rare or slow-germinating seeds for up to 10-15 years just in case. He prefers to sow all his seeds when fresh and moist. Drying seed often delays germination (as may happen with seed exchange seed).

Lilium monadelphum is one of the most gorgeous Caucasian lilies, it grows in beech forests in mix of stones, hard clay and leaf mold. An excellent plant in the garden and a little slow to increase from scales but it grows well from seed. *Lilium ledebourii* is a very distinct Caucasian lily which grows in Azerbaijan and Iran, it has bright white flowers whereas all other lilies from the area are yellow. It is a very good plant and excellent grower, slow to increase vegetatively so you must scale it or sow from seed. *Lilium sachalinense* is a dwarf orange-flowered form which sends a flower stem underground 30 cm [12"] distant from its bulb before rising out of soil.

Two reticulate irises from the Caucasus have very different growing conditions in the wild. *Iris reticulata* needs drier summer conditions so Jānis avoids watering it after flowering, harvests it every year and dry stores it over winter. The beautiful pale yellow *Iris winogradowii* is from moist mountain meadows or forests, tolerating some shade but disliking summer drought. It increases well but don't touch it until the clumps are crowded, then replant it immediately. Two Juno irises in Kopet-Dag are *Iris fosteriana* and *I. kopetdagensis*, both very difficult and yellowish-green, but *I. fosteriana* has deep purplish-violet standards, huge clumps in nature but in cultivation are very slow to increase.

The Carpathians have the most eastern population of *Erythronium dens-canis*, which grows all over Western Europe, with most of the cultivated forms coming from Spain. The Carpathian forms flower very early and do not increase well vegetatively; you must collect and sow seed from them. Also in the Caucasus and needing seed propagation is *Erythronium caucasicum* differing from *E. dens-canis* in always having yellow anthers [*E. dens-canis* are black]. Most

gorgeous of all dogtooth violets, *E. sibiricum* is an excellent grower in Jānis' garden. It sets seed and self-sows and increases vegetatively by bulb splitting. White-flowered *E. sibiricum* subsp. *altaicum* is a high mountain plant, growing in mountain meadows and open places, not in shrubs and shady places like *E. sibiricum,* and it flowers much earlier. *E. sibiricum* needs a cold winter to flower, whereas *E. sibiricum* subsp. *altaicum* does not. *E. sibiricum* subsp. *sulevii* has black anthers, and it does not appear to hybridize with other species.

Growing on a shaded slope in clay mixed with stones and leaf mold beside *Erythronium dens-canis* in the Caucasus was a new species *Scilla armena* (very similar to *S. siberica*), one of the tiniest, with only one or two flowers per stem (in the garden up to 10-12). Higher in the mountains in very wet places and full sun you may see *S. winogradowii*, with light blue flowers and the reflexed petals of *S. rosenii*. *S. rosenii alba* is very beautiful, but Jānis' absolute favorite is *S. gorganica* from northwest Iran, also with reflexed petals, but white, with deep blue anthers. He received one bulb of it from Kew, unfortunately infected with bacterial rot, but it flowered for him, and then died. Fortunately it was self-compatible and set a lot of seed. From seed he finally has enough to offer it this year [it is on the cover of his 2008 catalog]. *Scilla siberica caucasica* is a very floriferous, dark blue-flowered form. When S. *siberica* and *S. rosenii* are grown together they hybridize and he has named the hybrid form *S. ×sibrose.* With hybrid vigor, they are extremely floriferous, the flowers intermediate between the two, and the huge bulbs split easily. He now plants *S. rosenii* far from the others so that its seedlings stay pure. *Puschkinia scilloides* is a very common plant and is very variable in nature. Some flower spikes are so huge and floriferous they resemble Hyacinthus. *P. scilloides* 'Snowdrift' is a white-flowered form found in Armenia and *P. scilloides* 'Zangezur' is a densely flowered form.

An unusual pink form of *Muscari armeniacum* found by Bob and Rannveig Wallis of Wales in Turkey with the flowers at the bottom of the spike a deep pink and white at the top of the spike comes true from seed. In North Ossetia Jānis went in search of *Muscari pallens,* growing on almost vertical rocks in tiny cracks with a little soil, so the bulbs are small with few flowers on the spike. Although it is nothing special in nature, in the garden it is a gorgeous combination of light to dark blue with much fuller flowers, much nicer than the common *M. armeniacum*. Its leaves appear in spring, flowers later than other *Muscari*, it is not weedy, but does not split often and is best from seed, the seedlings flowering in the third year.

Arum elongatum from Crimea and *A. maculatum* [cultivar 'Purple Heart' shown] from slightly north in Krasnodar, Russia are very similar looking and quite difficult to tell apart by the flowers or leaves. It was only when Jānis had left them in the ground for three years (rather than dig them yearly) and allowed the tubers to settle into their natural positions that he was able to identify *A. elongatum* by the vertical tubers and *A. maculatum* by the horizontal tubers. *Arum korolkowii* taught him that not always what we see in nature is right in our garden. *Arum korolkowii* in the mountains always grows in deepest shade of some rocks or shrubs. When brought home and planted in shade in Latvia he lost it, but when he planted it in full sun he understood that what is shade in Turkmenistan is sunnier than shade in Latvia and full sun in Latvia is not full sun in Turkmenistan. Unfortunately *A. korolkowii* sometimes produces shoots before winter starts, so now he plants it deep and piling peat moss over it when shoots appear. One of the most gorgeous Arums is *A. conophalloides* with a purplish-brown spathe and reaches 1 m [39"] tall, but is very difficult to collect as it grows among spiny shrubs in hard clay. One with a lot of seedlings around it was found so they were able to collect the small tubers that have not yet flowered for him.

A beautiful Crimean onion *Allium meliophilum* [aka *Nectaroscordum*] is like a smaller version of *A. tripedale* from Armenia (both much nicer than the more widely grown *A. siculum v. bulgaricum*) with pendulous lilac-pink and white bell-shaped flowers. They make few or no offsets and must be grown by seed, taking at least six years to flower, so Jānis grows *A. meliophilum* in the greenhouse and *A. tripedale* outside flowering at different times and keeping them from hybridizing. The many beautiful alliums in Kopet-Dag include: *A.. bodeanum* allied with *A. cristophii*, but smaller with a muddy grayish flower sitting just between the leaves, *A. rosenbackiana* about 1 m [39"] tall with flower heads up to 20 cm [8"], that can be used in dried-flower arrangements, and *A. gypsaceum* growing on gypsum outcrops.

There are many dwarf *Tulipa* in Central Asia and we saw several forms. The common Dutch form of *T. turkestanica* is white with a yellow center, which in nature is much more compact, with many flowers on each flower head. More beautiful are the dwarf tulips from Karatau, *T. orthopoda* is only 10 cm [4"] tall with up to 5 flowers, and the recently described *T. orythioides* has a very distinctive shape to the stigma and styles so it is very easy to identify from other white with yellow center tulips. Two other multi-flowering tulips are: yellow-flowered *T. hissarica,* the earliest one to flower in the garden just as snow melts along with the earliest crocuses, followed by *T. turkestanica*, a dwarf with up to 4-5 flowers, the wavy leaves being quite variable. Flame red-flowered *T. praestans* from Dutch cultivated stock is multi-flowered, but in nature is mostly single-flowered to occasionally with two blooms, growing in shrubs and not easy to collect. The red-flowered *T. vvedenskyi* was introduced into the bulb trade by Jānis during the Soviet years when he was able to send some seed of it to Michael Hoog in the Netherlands. Widely used in crosses with other species, *T. vvedenskyi* nicely increases vegetatively and there are now many hybrids with new color combinations and shapes which have retained the vigor of *T. vvedenskyi.* The most common wild tulip *T. kaufmanniana*, is very variable in height and flower color, with one of the earliest, *T. kaufmanniana* 'Ugam' [aka 'Icestick'] up to 40 cm [16"] tall with rose and white petals. Growing in nature with *T. greigii* they hybridize, the influence of *T. greigii* seen in the purple stripes on the leaves. Jānis saw *T. fosteriana* many times but only one yellow-feathered on the petal edge, which was a good increaser, and he named it *T. fosteriana* 'Mrs. Dagnia'. A hybrid between *T. fosteriana* and *T. greigii* was named 'Academician Sacharov' after the Russian dissident, but when shown at a spring show during the Soviet years, the show organizer removed the plant label. Two other *T. greigii* found in Kyrgyzstan with red and yellow petals are named 'Sunset' and 'Ilze'. Usually *T. greigii* is uniform red, only in the Karatau Mountains is there great variability in color from yellow, orange, brownish, to lilac-toned, but no white, the dream plant for bulb growers. One of the most unusual tulips, *T. regelii*, separated in its own section because of its

undulated, pleated leaves, is difficult because it grows in very hot and dry summer areas, a good seeder, and its biggest problem being that it comes up too early. He does not give it water until the end of November, then he waters it once and its roots start growing. There are many beautiful tulips in South Caucasus, one of his favorites is *Tulipa armena* a typical red form as well as a rare bright yellow form. In all his travels he had only found the one yellow form, of which he now has 7-8 bulbs, as it is not a fast increaser.

Two *Colchicums* grow in Central Asia, both of them are spring flowering. *Colchicum kesselringii* is very variable not only by color but by petal shape, ranging from almost pure white to deepest purple with a narrow white rim. Yellow-flowered *C. luteum* has some variability in size and shape of bulb and size of flowers and both can be hybridized as done by his friend Arnis Seisums, who presented Jānis on his 50th birthday with one, a creamy yellow, named 'Jānis' by Arnis.

Gymnospermium are Berberidaceae, most beautiful are the copper-red and yellow flowers of *G. albertii.* Not as beautiful the yellow-flowered *G. darwasicum* grows more to the south. Both are very floriferous, Jānis has some large tubers that he has had for more than 20 years and they have an amazing number of flowers. You must collect seed of it, as they do not increase vegetatively at all and you can't cut the tuber, some even self-sow. They grow in clay that dries out in summer.

Eranthis longistipitata is a Central Asian species, you can separate it from all Turkish forms by the flower on a short stalk above the leaf, rather than sessile. Tubers are very small, pea size, so you can only increase it by seed. One of the most beautiful *Eranthis* is white-flowered *E. stellata,* it took Jānis several years to identify it because the Flora of U.S.S.R. described it as yellow-flowered, since they were working from dried herbarium specimens. Also, botanists had renamed it *Shibateranthis* so he wasn't finding it under *Eranthis*. In the garden excellent but difficult because it always has roots, and must be replanted immediately and seed sown when fresh.

Jānis Rukšāns' second talk "Versatile Fritillarias." There are so many *Fritillaria* in the world that he could not cover them all. He recommends *Bulbs of North America* [NARGS book] for American species of *Fritillaria* [he does not recommend *The Gardener's Guide to Growing Fritillaries*].

Fritillarias have a wide distribution from North America, Europe, and North Africa to Asia. Only one species grows on both sides of the Pacific and that is *F. camschatcensis*, which is found from Japan to Siberia, Alaska, and Canada. *Fritillarias* have at times been split into different genera by various botanists. They grow in many different habitats such as forests (moist, shady), wetlands, steppelands (dry to wet, sunny), deserts (dry, sunny; hot in summer), and high mountains (moist, sunny, cool, windy).

There is also great variability in the bulb forms too. The easiest for propagation are bulbs formed by two to several open scales that naturally split or you can break the bulb easily into two halves after harvesting. There are two different types of scale – one with a basal plate and the other without. By planting the split halves of those without a basal plate [e.g. *F. olgae*] at normal planting time in autumn you will get 3-5 small bulbs which will soon reach a flowering size bulb. The others with a basal plate [e.g. *F. stenanthera*] will be replaced with a bulb of same size as you split and if you are lucky will give you some offsets too. Some *Fritillaria* bulbs also form basal grains [e.g. *F. pinardii* and *F. acmopetala*], a way for the plant to survive if an animal eats the bulb then the small grains left grow up to flowering size. Jānis rarely uses the grains for propagation, because the grains only save you one year over growing from seed. Only if you want identical plants should you use the grains. Other *Fritillarias* are formed from grain clusters [e.g. *F. camschatcensis* and *F. recurva*] which makes it easy to split off the grains and grow on. The most difficult for increasing are the ones which have tunicate (onion-like) bulbs [e.g. *F. eduardii, F. sewerzowii* and *F. persica*] because the scales are joined at their sides and make a round common scale hard to break in two, and they do not form grains. To increase tunicate bulbs you need to cut them into small pieces, treat them with fungicide, place them in polyethylene bags with coarse vermiculite for 10 weeks then plant them in a mix of peat moss and coarse sand, sometimes taking 5-6 years for the small pieces to grow into flowering size bulbs. A Dutch nurseryman challenged Jānis to find a way to increase the bulbs more quickly and gave him 100 bulbs of the white-flowered *F. persica* 'Ivory Bells' to experiment with. He tried cutting shallow grooves on the outer scales and crosscutting a third up from the bottom, he also tried cutting off the base horizontally 1/3 from the bottom and placed the cut halves in boxes in the bulb shed with the cut surface up. In spring he was extremely surprised to see that the 1/3 base part flowered and produced a full-sized new bulb (able to be cut again next year) and the top 2/3 part made 6-8 good-sized bulblets that would reach flowering size within 3 years, much better results than the other methods of cutting. It is very important to use a sterile knife and handle the upper 2/3 part quite carefully so that the rings of scales stay together when you plant them cut surface up in the box.

Jānis showed many species of Fritillaria that he grows, some of which I will try to summarize here. The traditional garden form of *F. meleagris* is 30-40 cm [12-16"], a giant form found by an Estonian friend reaches 70-80 cm [28-32"]. Among the *F. meleagris* forms that were affected by Chernobyl not shown in his first talk, were two double-flowered forms, a red-checkered 'Pleniflora' and a white 'Alba Plena'. He is still evaluating the various double forms to see which are the best for cultivating. In addition to the *F. meleagroides* from the first talk, he showed a giant, very dark form [70 cm 28" tall] collected from near the Volga River in central Russia. He originally received these bulbs from a friend at a time when the border between Russia and Latvia was closed and so they passed through several hands and took several months before they eventually made it to him. They are forest edge plants and normally do not like drying out in summer, and were absolutely dry and dead looking when he received them. He soaked them in water for 24 hours before planting them and to his surprise they all came up the next spring. *Fritillaria ruthenica* shown before, is one of his favorites with its curly tendrils at the top. In the very Far East [Siberia and China] *F. ussuriensis*, also with tendrils, grows near shrubs for support in wet soil that does not dry out in summer. Unlike the previous two species, *F. ussuriensis* forms a bunch of very small grains that regenerate very well. Two other species found in Siberia and China are *F. walujewii* which is also found in Kazakhstan and *F. maximowiczii* whose petals look slightly scalloped or toothed making it easy to recognize and it is a good grower. One of the most unusual Frits from China,

F. davidii has red- and yellow-tessellated flowers with solid yellow at the tips of the petals, unusual in that the leaves come up separately from the flowering stem. It is a plant of monsoon areas with heavy rains starting in July and the soil is very damp. He grows them in pots and at the end of May one month of drought then places the pots in shallow trays of water so that the soil is really damp. Another unusual Siberian Frit from Altai Mountains is *F. dagana*, usually with one whorl of leaves and its bulb forms a 10 cm [4"] long stolon which forms a bulb at the end. To increase it you must be very careful digging the bulb to not break the stolon. The young bulblet needs the mother bulb to mature.

Found on both sides of the Pacific Ocean, growing in wet meadows and in forests on sandy soil, *F. camschatcensis* is very variable from 15-70 cm [6-28"] tall and up to nine flowers on a stem. The bulbs are like grains of rice, often with thick stolons. He has not grown any of the North American forms yet, only Russian forms. The Japanese ones have a reputation for being weak growers. Among the varieties Jānis showed was a double-flowered form and 'Lutea' a yellow-flowered form. Sometimes yellow flowers are among large populations of regular dark-flowered *F. camschatcensis*. Another beautiful Far East Frit *F. thunbergii* (usually offered in error as *F. verticillata*) is easily separated by flower color – *F. thunbergii* greenish-white and *F. verticillata* glistening white. Two forms of *F. verticillata* collected in Kazakhstan are very similar to two different species from China: *F. verticillata* 'Kara-Sumbe' with the same wide open flowers as *F. yuminensis* with light pinkish flowers and *F. verticillata* 'Urdzhar' with white bell-shaped flowers, whereas the Chinese *F. tortifolia* has light purple checkering on its petals. Whether the Chinese species are really just part of a very variable *F. verticillata* or are separate species is hard to tell from the Flora of China. One Frit from China *F. taipaiensis*, has yellow-green bell-shaped flowers with maroon splotches, a good grower outside and in the greenhouse. Tiny *F. unibracteata,* received under 5 or 6 different names from China, closely resembles a drawing of *F. regelii* in the Flora of Tajikistan, but it is hard to say if they are the same species.

The high mountain plants are tricky and not so easy to grow. One easy to grow and most beautiful is the greenish-flowered *F. cirrhosa* from Nepal, which comes up in very late July to August after all other Frits. One species from China with whitish outer petals and dark checkering inside received under several names (*F. monantha, pingwuensis, yuzhongensis* and *walujewii*) cannot be correctly identified using the Flora of China. Another species from China received under other names is *F. pallidiflora* with much yellower flowers than the common pale yellow form. In the late 1970's he collected a stronger growing form near the Kazakhstan border with China a beautiful and easy plant, an excellent grower, and flowers abundantly. He sent seeds to Michael Hoog in the Netherlands from which all commercial bulbs of *F. pallidiflora* come. He also showed a double-flowered form of *F. pallidiflora,* of which based on its slow rate of increase, there are probably only 100 bulbs in the world. Central Asian *F. olgae* grows in dry conditions and it makes new roots before the leaves die or seeds have ripened so you must take care when harvesting the bulb to dig before the new roots start to form so not to break them. Keep the bulb dry until replanting them in autumn or else leave it in the garden in order to collect the seed.

There are many varieties of *F. imperialis* including 'Lutea' a bright yellow, 'Ruduke' the golden yellow Lithuanian form and two of the oldest varieties 'Aureomarginata' with yellow-edged leaves and 'Argenteovariegata' with white-variegated leaves. Another tall Central Asian Frit, from Kopet Dag Mountain, is *F. raddeana* with smaller flowers than *F. imperialis* but with pale yellow/pinkish flowers. Closely related to the crown imperials, *F. eduardii* does not have the unpleasant odor of *F. imperialis* and forms huge bulbs that never offset, so you must sow seed which take up to 10 years to flower. There are several named forms red to orange, including 'Orange Bells', 'Cardinal' and 'Gala Gown'. They tolerate frost to -8 ºC [17 ºF] the stems lying prostrate then rising up as the day warms. Another Frit from Central Asia in Pskem Valley, Uzbekistan which usually does not increase vegetatively, is *F. sewerzowii*. He found one that had split naturally and it continued to increase vegetatively in his garden, he now wishes he had collected more from that area to interbreed and get a strain of vegetatively increasing plants. *F. sewerzowii* is usually uniform in flower color in each location but very variable from one location to another, but in one locality there was the whole range of colors. The best way to increase this form is to cut the bulb horizontally just as he discovered with the *F. persica* 'Ivory Bells'. A wild form of *F. persica* he showed us from Iran had much smaller yellow flowers rather than the normal plum-colored flowers.

Species in section *Rhinopetalum*, a group of smaller Central Asian Frits, have on the backside of the petal nectaries which resemble rhino horns. *Fritillaria bucharica* and *F. stenanthera* are the easiest of the section. In *F. stenanthera* the flower color ranges from white to deep pink. Garden grown bulbs are also much more floriferous than the same bulb in the wild and they increase much better too. The bulbs are scales, easily broken into two. Others in section *Rhinopetalum* growing in drier conditions have only one larger horn on the back of the petals, and include *F. karelinii* which is tessellated and F. *gibbosa* which is not (F. *ariana* is sometimes listed as a synonym of *F. gibbosa*). Identification is most confusing as he has received them under many names. He showed photos of *F. karelinii* and *F. bucharica*. Another plant which may be a new species he lists as *F. species nova* 'Pulkhakim'. He collected bulbs of the plant in Uzbekistan on a slope where they had been washed down by heavy rains. He had a hard time naming them since the flowers are similar to *F. bucharica* but the leaves are undulate like *F. karelinii*.

From the Caucasus Mountains comes one of the easiest Frits for the garden, *F. crassifolia* with subsp. *kurdica* being the easiest of the four subspecies. Jānis has many cultivars of it that are named for the areas where he collected them including 'Aragat', 'Sevan' and 'Bitschenag' varying in the amount of maroon and greenish-yellow in the petals. One of the most beautiful he named 'Turkish Glow' with dark red shiny petals, is long flowering, and a good increaser. Two other superficially similar Frits from the Caucasus *F. armena* and the larger *F. caucasica*, are both easy to grow with deep plum-colored flowers but easy to distinguish by size of the plant and size of grains. Not as easy, is *F. crassifolia* subsp. *crassifolia* with rounder, shorter flowers. Other forms *F. crassifolia* BATM-059 with large flowers, 7 cm [3"] tall, *F. crassifolia* subsp. *poluninii* which is quite rare in the wild and difficult to grow in his garden since it comes from South Iran, Syria and

Iraq, and subsp. *hakkariensis* with similar coloring to *F. michailovskyi* [reddish base/yellow tip of petals].

There are so many species and forms of Frits in Turkey that it is not always easy to identify what they are. One of the most beautiful plants which was originally described in the early 20th century but not rediscovered until 1965 is *F. michailovskyi*. It is now in micropropagation so is cheap and is easy to find. There is a less common yellowish variety of it found in Turkey known as var. *aurea* and a dwarf form which has a mass of up to seventeen flowers on the short stem (rather than the normal 1 or 2) known as 'Multiform'. *F. alburyana* is another strange hardy Turkish Frit so small that the flowers get dirty sitting at ground level unless mulched with grit. The flowers are a beautiful lightly tessellated pink and a new form (LST-247) they found in Turkey has dark purplish-pink flowers. Quite popular in gardens is *F. aurea* yellow with slight red tessellation and 20 cm [8"] tall, but he prefers a smaller one collected in Turkey (BATM 04-371) which is only 10 cm [4"] tall but with a huge flower. In the Soviet part of the Caucasus (Armenia/Georgia) usually in shrubs you will find another yellow-flowered plant, *F. collina* which is much taller 25 cm [10"] and usually more checkered than *F. aurea.* Growing very well in his garden but found in open meadows in nature is deep plum-purple *F. latifolia*, with subsp. *nobilis* flowers at soil level, getting dirty unless mulched with grit, and subsp. *latifolia* having a longer flower stem.

A tiny dwarf form of *F. carica* is only 7-10 cm [3-4"] tall with bright yellow flowers and slight red marks on petals. The very variable *F. pinardii* ranges in color from yellow to muddy mixtures of yellow and red to one that looks a little like *F. michailovskyi* with dark red and yellow tips. Some populations are grain forming, some form stolons, one form with gorgeous plum with yellow-edged petals has stolons which form leaves on the ends. For *F. fleischeriana* you will usually receive the wider leaved *F. pinardii*. Two forms of *F. minuta* are the dwarf wild form with pinkish-orange flowers and the tall Dutch cultivated form with pendant flowers hidden under the leaves. The last Frits we saw were a small bright yellow-flowered *F. minima* and a dark red *F. zagrica* told apart from the related *F. armena* and *F. caucasica* by the small yellow spot on the tip of the deep purple petals.

The original soil in Jānis' garden of 20 years was very heavy clay and his routine has been to plant on raised sand beds, first a row of coarse sand, then the bulbs covered with more coarse sand and then soil, and in winter he puts 6" of peat moss on top. When harvesting the bulbs it mixes together and after 20 years his soil is now very light, porous and humus rich and Frits and other bulbs grow very well in this soil. He advised planting bulbs on a slope even a slight one. Soil freezes in a hard winter up to 1.5 m deep, and in the spring when the top of the soil warms up, but is still frozen solid below, the water stays near the surface since water from the melting snow can't drain through. On flat ground the water has nowhere to go, but on a slope it drains away.

To receive a copy of Jānis Rukšāns Bulb Nursery Catalog send $5 cash to: Jānis Rukšāns, Dr. biol. h.c., "PULKAS", P.O. Stalbe, LV-4151 Cēsis Distr., LATVIA.

Winter Potluck Salad provided by Libby Greanya

MARLA'S QUINOA SALAD by popular demand....

Rinse **1 C Quinoa** & drain. Add **2 C Water**. Cook for 15 minutes. Chill. Add a finely diced **1" piece of Lemon Grass** [available at Meijer], fresh-squeezed **Lime Juice** (1/2-1 lime), & chopped **Vegetables**. Mix, **Salt** to taste, & chill. Garnish with chopped **Cilantro**.

Vegetables used by Libby Greanya for the Salad

chopped **Red Onion**, **Peppers**, & **Cucumber**, minced **Garlic**, fresh **Grape Tomatoes** & **Craisins** (dried Cranberries).

Quinoa [From Wikipedia], pronounced KEEN-wah or KEE-no-uh, is a species of *Chenopodium* grown as a crop primarily for its edible seeds. Not being a grass it is a pseudocereal rather than a true cereal. Originating in the Andean region of S. America, where it has been an important food for 6,000 years, its name is the Spanish spelling of the Quechua name *kinua* or *kinoa*. *Chenopodium quinoa* believed to have been domesticated by the Incas in the Andes from wild populations, was held by the Incas, to be sacred as "chisaya mama" or "mother of all grains," the Incan emperor traditionally sowing the seeds using 'golden implements'. Quinoa was important in the pre-Columbian Andes being secondary only to the potato, and followed by maize. The protein content is very high (12%–18%), an unusually complete food that is gluten free.

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