

Reticulatas (Iridodietyums)

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What a contrast: on the Feb 19th weekend we had a Cub camp (Scouts Canada), where we participated in the 25th annual Operation Snowman. The deep snow made some events difficult. Since then, a record week of warm temperatures and occasional rain meant by the 26th almost all snow had melted. During the day all you needed outside was a warm sweater. A number of Galanthus opened, and at the front of the house (south-east facing) there were two Reticulata hybrids showing colour. Two days later I discovered 94-DS-1 was almost ready to open. It was up a tad more than the first of three 94-HW-1 blooms. This is the earliest I've ever seen the Reticulatas bloom – a full month ahead of normal.

This year's big news: six more second generation Iris x *mcmurtriei*¹ hybrids bloomed²! Of these two were back crosses using *danfordiae* pollen. One of these, 96-BN-1, is quite lovely and different from any existing Reticulata. Seeing it has me keenly looking forward to seeing other future F2s. 96-SD-1 on the other hand simply looks more or less like a more spotted I. *danfordiae*; in that sense it's nothing special.

96-BN-1: 89-AC-6 x *danfordiae* (medium blue x yellow), stunning! An exquisite combination of bluey-green dots and feathering on white, with a large bright yellow patch on the fall blade. The style arms have a yellow-green, to at times greyed-blue, stripe running down their back, while the style lobes have light greyed-blue veining. It increased nicely however I am expecting only one bloom next year. There's a good chance a sibling will also bloom (unfortunately I cut off a chunk of it when I was replanting). I was actually surprised that it hadn't bloomed because it's main bulb had divided in two – presumably the original bulb was just on the borderline between blooming and not blooming. Total bulb count for 96-BN-1 is now 26, with 18 of those being bulblets. Two of the small bulbs were sent to Wim for evaluation (they should bloom for him in 2002).

17 seeds were produced using 94-HW-1's pollen. Too bad I can't see the results of crosses like this one sooner!
-seeds from pollen

96-SD-1: 89-F-2 x *danfordiae* (medium blue x yellow), looks like a very spotted *danfordiae*. The large spots are actually blue, but when they combine with *danfordiae*'s yellow they appear green. The back of its style arms are greyed green across their width; *danfordiae* on the other hand has two wide, to non-existent, dark green stripes down its style arms.

It produced 22 seeds using pollen from 94-HW-1, 94-AT-1 and 96-BN-1
-seeds from pollen

Interestingly, if you carefully compare 96-SD-1 to 96-BN-1 you'll probably conclude the two are identical except for the overall yellow colour being turned off in 96-BN-1. Both have a couple of siblings coming along; next Spring is definitely going to be interesting! Unfortunately though, when I replanted 96-SD-1 I found its main bulbs and many of its bulblets had disappeared – just like *danfordiae* has a tendency to do. Four bulblets did survive, but that means it will be a couple of years before it blooms again. One of its siblings was completely gone, main bulbs and all. I can only guess our unusually high rainfall this summer caused this, in conjunction with the fact the bulbs had never yet been replanted (which meant they were in contact with one and another, and thus any disease would likely affect them all).

Toronto Star, August 21, 2000, page 1

Farmers are closing a growing season marked by damp, cold weather that has forced thousands of hectares out of production and stunted crop growth and spread disease in the rest.

More than 278 mm of rain fell during May and June, the most in 160 years of keeping such records. ...farmers will have to battle an array of diseases that last winter's mild weather failed to kill off, and which have thrived in this summer's cold, damp weather.

Every major crop in Ontario has a disease running through it, mostly mould or fungus. There's blight in the potatoes, fusarium in the wheat, rust in the corn, powdery mildew in grapes, blue mould in tobacco and the ominously named sudden death syndrome in soybeans

Surprisingly three more F2 clones in addition to 94-HW-1, each from different crosses, were a similar cream to pure snow-white overall. Each had a different shade of blue on their style arms, while their style lobes were the overall flower colour. They all had varying amounts of blue veining beside their fall's ridge, with the fall blade being the overall flower colour. Clearly there is an underlying set of genes responsible for this pattern.

94-DS-1: 89-F-1 x {self + 89-Q-2} (medium blue x light blue), cream with light blue style arms which have a greenish cast running up the centre of their back. The outer portion of the styles is white, especially in the lobe area. The lobes are

¹ Iris x *mcmurtriei* are crosses between I. *sophenensis*, I. *danfordiae*, and their progeny. Note: the designation 'x *mcmurtriei*' [where 'x' means 'hybrid'] has not yet been made official by Brian Mathew.

² See last year's report for descriptions of 94-HW-1 and 94-GU-1.

large compared to typical Retics due to its *danfordiae* parentage. Its fall blade is 15 mm wide, with 5 cm between tips (equivalent to a diameter of ___ cm). The fall ridge is yellow-orange, with a hint of soft yellow extending onto the forward part of the blade. There is veining beside the ridge, but its colouring is subdued. Its standards are 2.5 mm wide x 30 mm long with a yellow stripe running down their middle.

18 F3 seeds were set using 94-HW-1

-seeds from pollen

94-AT-1: 89-Q-4 x 89-AC-4 (medium blue x dark blue with marked yellow influence), a lovely cream with light blue on the back of the styles, which changes to cream in the lobe area. The standards were uneven, with one being 1 mm in width, while the other two were only half that. They were however all 30 mm long. The fall ridge is yellow with very noticeable dark blue veining beside. The ends of the veins sweep away from the ridge but slightly less quickly than with 94-HW-1.

94-HW-1's pollen was used successfully to produce 14 seeds

-seeds from pollen

96-DZ-1: 91-FC-3 x *danfordiae* hybrid. Is this parentage correct? It looks more like two F1s intercrossed. *Danfordiae* hybrid is just a pure *danfordiae* that I raised from seed. Incredibly 94-DZ-1 is absolutely snow-white in colour. Its style arms have a light blue stripe down their back with a feathered edge. Widely spaced veins accent the fall beside its yellow ridge, highlighted by an ever so soft yellow around the end of the ridge.

9 seeds were produced using pollen from 94-HW-1 and 96-BN-1

-seeds from pollen

I didn't really get to see 95-F-1 but it appears to somewhat be a solid mauve. I expected more of the F2s to be along this line. In fact, I expected it would take a number of generations to get the love whites / creams I now have. I had expected / "been afraid" *sophenensis*' veining would inherently be difficult to get rid of. I also wondered if I'd get a lot of "dirty" clones, given the way *danfordiae*'s yellow mixed with blue in the F1s. Wow, what can I say. I've been extremely lucky.

95-F-1: 89-AC-7 x 89-F-1 (medium blue x medium blue) unfortunately a bug got the bud tip while it was under straw, so the flower didn't look like much when it opened. The only concrete fact I can tell you is its style arms are completely mauve. The portion of the fall under the style arm has some mauve veins, but you really can't conclude much from this. Previously I thought this bulb belonged to a cross beside, but clearly from its thin standards that was incorrect.

My favourites of the eight F2s are 94-HW-1, and 96-BN-1, followed by 96-DZ-1.

Which are your favourites?

Other Important news:

95-AI-1: *danfordiae* x 88-AX-1, where 88-AX-1 is Çat x *danfordiae*; thus this was suppose to be a backcross. Unfortunately it turned out to be just pure *danfordiae*... disappointing! The next chance of seeing a cross with 88-AX-1 is in two year's time, but their were less seeds produced in 1997 than in 1995, so reality will probably turn out to be in three years.

94-D-1: Talish, white pollen x {P&M & 88-AX-1}. I was pleasantly surprised to find that 88-AX-1 was clearly the pollen parent of this hybrid. Like 88-AX-1, 95-D-1 is small in size. Its colour is a mixture of blue and purple shades with a number of similarly coloured large spots around its orangish ridge. The only sign of *danfordiae*'s parentage is in its very narrow standards. As expected it's sterile.

Updates:

94-HW-1: gave 3 blooms just as expected. Unfortunately a bug of some sort got the first bloom after it had been open for a day. All that was left was one set of flower parts with their tips slightly eaten; and two days later that was gone. Fortunately though I was able to salvage one partially open anther; I had been leaving them to ripen just a bit more. I put down slug bait after the first damage, but there wasn't any indication that a slug had been the culprit. I had crossed the flower with 94-DS-1 pollen while it was still good, but no pod was set.

All that I did for the other two flowers was put them under a can that was pressed tight against the ground (it didn't have any air holes). The dishpan that was covering the first flower hadn't been tight against the ground partly due to a thin layer of straw, and partly due to the unevenness of the ground, so something could have easily crawled under it.

A few other Retics showed signs of various degrees of having their buds eaten. In these cases though it had happened while they were covered with the winter layer of straw mulch. Too bad the bug hadn't gotten another clone instead.

Last year's flower had four sets of flower parts, but this year's three blooms were all normal.

Only one of the other two flowers set seed: 18 with 94-DS-1 as the pollen parent. I'm expecting between 6 and 9 blooms next year. The total bulb count is now 44, with 25 being bulblets; this is down from my prediction of 107 and 36 respectively. It is in line with 89-Q-3's count at the end of its 2nd year. Note: two small bulbs had been given to Wim last year for evaluation. I expect they should be large enough to bloom for him next Spring.

→ any seeds with pollen?

94-__: *danfordiae* x 87-BZ-__ gave one bloom, but it turned out to just be *danfordiae* x self

Over the evening of March 11th we got a fair bit of snow. In total the accumulation amounted to 9 cm (3.5"). Daytime temperatures were only about 3°C, but it was bright and sunny. It was just a few days later (unrecorded), that the snow all disappeared. I mention this just so you didn't think that Winter had totally left a month early.

This year's big news: Two of my second generation Iris *mcmurtriei*³ hybrids bloomed!

94-HW-1: 89-Q-1 x 89-AC-4 (light blue x dark blue with marked yellow influence), its bud was pale yellow like *winogradowii*! The overall colour when it opened was cream. Its style arms were white with wide greyed blue stripes on either side! There were blue veins on the fall, but they weren't on the fall blade itself, rather up by the style arm. There was a soft yellow highlight around the end of the fall ridge. It's QUITE nice! I couldn't have asked for a more special first F2 bloom! Now it's a matter of increasing stock to the point where there's enough to start introduction: possibly in 7 years time (depends on how interested commercial growers become).

At the end of the growing season there were 3 bloom-size bulbs, 4 that are 1 year away, 5 that are 2 years away, and 10 bulblets, for a total count of 22. I'm pleased with this, both because the count is more than when the F1s first bloomed, and because of the number and reasonable size of the bloom-size bulbs – hope the trend continues! Two of the bulbs were given to Wim for evaluation, but they'll need a growing season to get up to bloom-size. I wanted to keep the larger bulbs here so that I could use them for hybridizing.

I expect 94-HW-1's four sets of flower parts were just an environmental anomaly and next year it will have the normal three. Some of you may be thinking this was due to heavy use of Cygon, as can happen with bearded Iris. But I'd be fairly certain this fellow wasn't affected by any chemical sprays.

I wanted to be sure of getting seed so I selfed it, then a day later crossed it with the other s x d F2 clone below, followed several days later with pollen from *danfordiae* as well as an F1 clone. Initially it appeared my efforts had been successful, but unfortunately the pod turned out to be false. Hopefully next year... However its pollen was used successfully in many crosses (17 of 22), including back crosses to F1s (15 of 19; i.e. F1 x F2) and diploid *danfordiae* (1 of 2). In total 268 seeds were produced, with 234 being onto s x d parents, 26 onto *danfordiae*, and 8 with "Talish". It was nice having the fourth anther since it allowed me to make more crosses than would have otherwise been possible.

³ Iris x *mcmurtriei* are crosses between I. *sophenensis*, I. *danfordiae*, and their progeny. Note: the designation 'x *mcmurtriei*' [where 'x' means 'hybrid'] has not yet been made official by Brian Mathew.

94-GU-1: 89-Q-5 x 89-Q-3 (light blue x light blue) wasn't anything special. It was light blue, with small amount of soft yellow influence, giving hints of green, particularly on the fall blade. Its form is small like my collected ANM2325 diploid *danfordiae* (vs. the typically-sized form from Ahmet Atilla). I would have been disappointed if this clone had been the first F2 to bloom. I actually prefer all of my F1 clones to this one. I hadn't expected its bulb was large enough to bloom. It appeared to have set 9 seeds using 94-HW-1 pollen, however the seeds turned out to be soft. There goes the chance of seeing an F3 in 5 years time.

I used 94-GU-1's pollen successfully in 7 of 8 crosses. 98 seeds were produced by 5 of 6 back crosses to s x d parents (i.e. F1 x F2), and two crosses back to *danfordiae* gave 33 seeds.

The total bulb count was only 11, and I don't expect 94-GU-1 will bloom next year, since its largest bulb was only 8 x 10 mm. Three others are 2 years away from bloom, and the remaining 7 are bulblets.

As you might imagine, I'm eagerly looking forward to seeing what other F2s look like! As expected the F2 expression is indeed opening up (particularly because the original parents are so different from one and another). I'm expecting at least four other F2 clones will bloom next year.

2nd most important news: a 'Cantab' x *winogradowii* hybrid bloomed. It was definitely true! Often very special crosses like this either don't germinate, or don't turn out to be true. It was cream overall with a "masked" blue fall blade (ie. very subdued blue; from 'Cantab'). The flower had *winogradowii*'s shape. Its bud was pale yellow. As expected it is sterile and its pollen is garbage: a dead end. I don't really expect it to be a significant clone (big commercially), but it is nice looking. We'll see how it does over the next couple of years.

I did replant this clone, but that was at the end of November when I didn't have any time to count its bulbs – bulb counts are useful since they give a reasonable indication of how well a clone is doing. I did give Wim one of its bulbs for evaluation, but it was a small one, so it will need one year to reach bloom-size.

Winkleri:

'*Winogradowii* Alba' from Eduard Hanslik bloomed, but it turned out to be a *winogradowii* hybrid, possibly with *hyrcana* "Talish". This clone is cream overall with a modest blue tinge on its fall blade. As expected, it appears to be sterile. Certainly calling it *winogradowii* Alba gives it a lot more mystic than saying it's a hybrid (and presumably similarly raises its price), since it's purported to be a rarity of something that in itself, is considered rare / difficult. The fact it's hybrid is a disappointment of course since it means the clone is a dead end in terms of hybridizing.

Iridodictyum kopetdagensis –Igor' flowers compare to Rodionenko's
-did it do better than last year, eg. larger flowers

Kopetdagensis was said to "differ from [*reticulatum*] by a number of characters: narrow leaves without four clearly seen borders; shorter fruits [seed pod] -- its length only twice (not more) longer than width, whereas in *I. reticulatum* fruit length two-four times longer than width. Moreover, leaves of the new species in a period of flowering are of smaller sizes [shorter] than that in *I. reticulatum*, but in postfloral period they grow up faster to 40-48 cm (but not 7-12 cm)." Its leaf tips are said to not be pointed. The description, which was with last year's report, lists its colour as: dark violet.

Kopetdagensis does in fact have square leaves, with pointed tips as you would expect. I didn't compare its seed pod size, but then I have seen variable seed pods in wild collected forms of *I. reticulata*. I also didn't compare leaf lengths, but I don't think it is a major characteristic to use to separate species.

On April 11th, with Reticulata peak already past, we got about 3 cm of snow. It came down fairly quickly, so it looked like we were having a blizzard.

One of next year's most important blooms I'm hoping will be a *danfordiae* x 88-AX-1 clone. 88-AX-1 is from Çat x *danfordiae*. The new 1995 hybrid could of course turn out to be just a *danfordiae* self -- I hope not. Both it and a *danfordiae* x self are growing a few rows from one and another. Both were the last to die down in late July. Their leaves seemed to keep hanging on to being green long after all the other Retics had died down. As expected their main bulbs were quite large: 13 x 20 mm. There's a chance the *danfordiae* x 88-AX-1 will have two blooming bulbs⁴, and a sibling will likely bloom as well!

⁴ It has 2 bloom-size bulbs, 3 that are 1 year away, 2 two years away, and 23 bulblets; for a total of 30.

Incidentally, 80% of this year's seed from Çat x *danfordiae* pollen was from crosses onto F1 *sophenensis* x *danfordiae* clones (just under 300 seeds). I'm wanting to bring Çat's plum or wine-red colour into the blue-yellow mix of the s x d line; plus possibly mix up the genetic expression a bit more. The plum colour is from anthocyanins of course, but Çat's genes may have the needed "switches" to increase the range expression in the progeny. In 1998, 188 seeds were from similar crosses. That was just over half of the seeds produced that year using 88-AX pollen. As well 150 seeds were from back crosses onto *danfordiae*. In 1997 I got 24 seeds from a single cross onto an s x d parent. And in 1995 there were 26 seeds from two back crosses to *danfordiae* (it's one of those I'm hoping to see next year).

A bit of a surprise were two 88-AX hybrids which bloom amongst some mixed hybrids. I thought I had kept very careful track of 88-AX bulbs, but somewhere along the line that hadn't happened. Since I wasn't going to replant the mixed hybrids I tried to carefully extract the 88-AX clones along with their bulblets in order to plant them separately elsewhere.

Bulb counts for 88-AX-1, 2 & 3 have increased to 15, 36, and 42. They had been 16, 16, and 22 respectively. Even though you might think 88-AX-1 should be the strongest, since it started blooming a couple of years ahead of the other two, that clearly isn't the case. One 5 mm diameter bulb had its top eaten off. Overall most bulbs are small so I would guess there will only be three blooms in 2000. Next year some of the bulblets from 3 years ago should increase enough to bloom in 2001.

This year I got to see 89-A-3 (*hyrcana* hort. x *danfordiae*) in all of it's glory. It's distinctly orange, but has greyed blue mixed in as well. Last year a slug ate the tip of it's bud, which meant a good portion of the fall was missing. It has increased modestly and I am expecting it will bloom again next year (total count 12 bulbs).

As in the past, none of the crosses onto 89-A worked, but 5 of 17 crosses with it's pollen supposedly did. They gave a total of 85 seeds. One of these, on to 87-BB-1 gave 60 seeds. I'm suspect as to whether its true or not; time will tell. The other four were onto s x d parents.

92-BB-3 broke the mold of each *histrioides* x *winogradowii* cross having similar progeny. 92-BB-1 and 92-BB-2 were both white with dark blue spotting and a few blue veins around the outside of the fall blade. 92-BB-3 was similar but had a noticeable yellow influence. More of the other *histrioides* x *winogradowii* clones also bloomed, but they were similar to their predecessors that had bloomed for the first time last year. In my mind 92-BB-1 ('Elegant'), remains the most different from 'Katharine Hodgkin', 'Frank Elder', and 'Sheila Anne Germany', though it didn't bloom here. The largest bulb of it, which I sent to Wim last summer did bloom, but he didn't feel it was as nice as my photo portrayed it to be; I believe the photo shows it correctly. Wim mentioned that with some bulbs, he has found it takes a year for them to get settled. I'm looking forward to seeing next year how well 92-BB-1 compares to its 1998 flower. I know I wasn't as impressed with 94-VX-1 as I had been last year.

One of 'Elegant's 3 bulblets come up poorly in the spring and subsequently disappeared. The other two increased to 7 mm in diameter. The main bulb divided into two even though it hadn't bloomed. The largest, 12 x 15 mm, should be big enough to bloom next year. It produced 5 bulblets, however I dropped one near where I was to be planting them in a bed in the backyard. There was little hope of finding it amongst all of the strawberry plants, etc.

The bulbs I got back from Wim were of excellent size: 20 x 28, 16 x 23, and four small bulbs averaging 3 x 5 mm. If only I could grow them that well!

There were only 4 *winogradowii* flowers as I predicted last year (I sold two other bloom-sized bulbs). Unfortunately they produced very little pollen (anthers didn't open properly); and only did so after the *histrioides* clones finished blooming. It doesn't appear that I measured the bulbs when I replanted them, so I don't have a prediction of how many will bloom next year.

Unfortunately Otto Fauser's 'Polly': *I. reticulata* hort. x *winogradowii*, still has yet to bloom. I now have 3 bulbs of it, but the largest is only slightly bigger than it was last year, so I doubt it's going to bloom: 10.5 x 13 mm. I'll keep my fingers crossed in hopes it will, since size-wise it just might – I'm interested to actually see it in bloom.

The 1992 supposed *danfordiae* x *winogradowii* did indeed bloom, but turn out to be simply pure *danfordiae*. Oh well.

'Marguerita' is quite a nice variegated leafed sport of 'Clairette'. I believe its flowers are darker blue than 'Clairette'; closer to 'Springtime's fall blade colour. It became available commercially for the first time last year. I would certainly encourage you to try 'Marguerita'. It's only semi-fertile. Out of 26 crosses only 3 worked as a pod parent giving just 6 seeds. Its pollen was used a lot more successfully in 9 out of 17 crosses, for a total of 80 seeds (3 of the crosses accounted for 49 seeds – hope they are true).

The Armenian Caucasus Alba clone had a single bloom. I again selfed it, and got 15 seeds. I had carefully left a fair number of flowers unhybridized, ready for its pollen. As Figure 1 shows, I was able to produce 452 seeds from 19 of 28 crosses. I really wish I could get its numbers of both bulbs and flowers up. I don't believe any of its bulbs are large enough to bloom next year.

Hyrcana 'Talish' is early, just as my *sophenensis* x *danfordiae* hybrids are.

The number of 1995 seedlings coming along is very disappointing (they'll bloom for the first time next year). I have no idea why this is. The 1996 area, and now the 1997 area, were fairly thick with seedling leaves. All three had been equally covered with straw over the winters.

This year there were over 340 F1 *sophenensis* x *danfordiae* blooms from 52 clones, representing 9 crosses spanning 6 years; up from 262 last year. This doesn't count 20 boom-sized bulbs given out for testing. In last year's report I had said, "With bloom-sized bulbs being down in number, I'll be lucky next year to match this year's total." I'm glad to see the number was higher than I "feared." A quick guess would be that numbers should be up somewhat next year, but likely not by much due to overcrowding, which I believe has kept large bulbs smaller than they otherwise would have been.

Overall Reticulata increase was fairly good, with the numbers increasing as expected, if not better in many cases. Like last year however, I found many of the s x d clones had less bloom-sized bulbs than expected. It has become fairly evident that a major reason for this is due to not giving them enough room⁵. I had a few bulbs that were planted off to the side in the same general area because I wasn't sure which clone they belonged to⁶. Their main bulbs were quite a bit bigger than those in the main clumps that they belonged to. As a result I've opened up a lot more space for them. Last year's were in roughly 35 square feet (out of about 64 sq. ft for all 1989 clones). I now have them planted in 180 sq. feet. At first glance that many seem like a lot (5 times), but keep in mind that they're increasing at a rate of roughly 2.5 times. Just to keep them as tight as they were last year would have required about 90 square feet. Since they were too tight then, this only just brings them up to about the right amount of space.

When I replanted in 1997 the bulbs were simply put back into the same amount of space they had been in previously; which had been reasonably tight already. The result clearly appeared to be that the larger bulbs increased poorly. This shows up in the low number of blooms in 1999, which are a result of the poor increase in 1998 (in terms of large bulb size; the overall numbers were increasing nicely, as was the size of the small bulbs). In 1998 I replanted the bed, but was only able to marginally increase the space available for each clone. As a result large bulbs continue to be smaller than they should be, hence the relative low bloom now expected in 2000. The additional space I gave the bulbs this fall will hopefully translate into the predicted number of flowers being produced in 2001.

Next year I'll only be able to add 40 sq. feet more to s x d cultivation. This additional space is in a bed with coarse sand. Unfortunately sand hasn't proven nearly as good as sandy loam for most Reticulata cultivation; interestingly Iran 895 does well in coarse sand, and poorly in sandy loam. Ideally I will need to go from the 180 to 450 sq. feet. As a result of being able to go to only 220 I will likely need to limit the clones that I continue to increase in number. I expect I'll be able to find room for next year's seeds in part by reusing some of the 1995 seedling area. I'll definitely run into trouble with room needed for expanding 1992, 93 and 94 seedling growing area. By hook, or by crook, I'll work something out. The big problem will be what to do in 2001 and beyond! So far in recent years I've managed to work things out: in part by adding more space, as well as using the beds differently.

This year I marked all of the s x d bulbs that produced seeds. When I dug the bulbs I compared their size with those that hadn't set seed. It would appear that in general the seed setters were indeed smaller by about 1 year's worth of growth. In the majority of cases this meant that neither of the two resulting bulbs were large enough to flower! Hopefully the difference will prove less in more widely spaced situations; something I intend to find out next year. My "standard" (expectation) is that one of a flowering bulb's increases should be flowering size: ideally as big, if not bigger, than the original bulb.

I'm looking forward to seeing how the bulbs Wim returned do – to see whether his special treatment has helped them. Certainly some of the key 1987 clones are not producing bulbs as large as they use to be. One wonders if there is some virus or other ailment that is affecting them.

⁵ You can shoehorn in only so many before they start to complain: either by not increasing in numbers or size as expected, or by becoming infected by disease. Fortunately the latter case hasn't happened, though some clones have not increased as expected, which suggests that something is getting them.

⁶ Yes, I tagged them when they bloomed this year, so I could plant them back with their "family" in the fall.

The total number of bulbs of 89-Q-3 is down slightly from my prediction, but is within the range you would expect. In fact, when you take into account the number of bulblets that the 10 bulbs I sent Berney Baughen would have produced, the prediction was essentially “spot-on”. 89-F-4 continued to have the highest number of bulbs: 3360, with 2099 being bulblets.

I had actually counted 89-F-4’s bulblets first then weighed them. 89-Q-3’s weighed slightly more, so I expected their number to be higher than my prediction. That wasn’t the case, so clearly 89-Q-3’s bulblets were bigger on average than 89-F-4’s. On checking my notes I see that I wrote, “produces a fair number of very small bulblets (ie. less than 2.5 mm); many more than most other clones”. Last year 89-F-4 only had slightly more bulblets than 89-Q-3: 858. However, it also had a few more large bulbs, so I might have predicted it would produce about 2436 bulblets. Looking at this year’s numbers, it would appear that a few of last year’s bulbs were lost. That would in part account for the lower bulblet count. It also appears that some of the bulbs increased slightly more in size than I would have predicted – some that should be 2 years away are actually 1 year away.

	<u>End 1994</u>	<u>End 1995</u>	<u>End 1996</u>	<u>End 1997</u>	<u>End 1998</u>	<u>End 1999</u>
Bloom-sized ⁷	2	5	7	25 ⁸	21 ⁹	26 ¹⁰
1 year away	?	1	16	37	81	347
2 years away	?	8	27	82	309	801
3 years away ¹¹	<u>8</u>	<u>36</u>	<u>67</u>	<u>249</u>	<u>807</u>	<u>1845</u>
Total:	?	50	117	393	1211	3019
If Doubling	2	4	8	16	32	64

	<u>Returned</u> ¹²	<u>End 1999</u> <u>Actual</u>	<u>Predicted</u>	<u>End 2000</u>	<u>End 2001</u>	<u>End 2002</u>	<u>End 2003</u>
Bloom-sized	8	18 est.	85	371	1,172	3,041	9,584
1 year away	13	334	309	801	1,869	6,543	18,024
2 years away	1	800	811	1869	6,543	18,024	53,541
3 years away	<u>32</u>	<u>1813</u> ¹³	<u>1916</u>	<u>6,172</u>	<u>16,852</u>	<u>50,500</u>	<u>148,768</u>
Total:	54	2965 act.	3121 est.	9,213 est.	26,436 est.	78,108 est.	229,917 est.
If Doubling		64		128	256	512	1024

Figure 1: 89-Q-3 (*sophenensis* x *danfordiae*) Bulb Count

As you can see in the table above, I had hoped for 85 bloom-sized bulbs of 89-Q-3, but there were only 18! And those bulbs are just big enough to bloom (10mm in diameter). The bulbs I got back from Wim de Goede who had been evaluating them in Holland, were of a fantastic size compared to the bulbs grown here: three were 17 x 22 mm.

The predicted numbers above have been updated to reflect this year’s actual results.

⁷ Bloom-sized are > 10 mm; 1 year away are > 7 mm; 2 years away are <= 7 mm; 3 years away are bulblets. Note: keep in mind that sizes may be different for other hybrids. Where appropriate, the actual number of blooms are shown, and the ‘1 year away’ numbers were adjusted accordingly.

⁸ 21 bloomed here in 1988, but 4 which were given out for testing should also have bloomed. I had predicted only 17 in total would bloom. This means that 8, which were about 10 mm in diameter, also bloomed.

⁹ Includes 10 sent to Berney that were potentially large enough to bloom in 1999. Originally I predicted only 4 would be left here to bloom. There were in fact 11 blooms.

¹⁰ Includes bulbs returned by Wim: 8, 13, 1, and 32 respectively.

¹¹ In some clones, from time to time a few bulblets are quite small. By the following year they are only up to being considered large bulblets. On average bloom-size and 1 year away bulbs produce 8 and 4 bulblets respectively. Note: 91-FC-4 bloom-sized bulbs can have as high as 25 bulblets: all of reasonable size.

¹² Wim returned the bulbs he had been evaluating. Several were 17 x 22 mm in diameter. My largest were only 10 mm in diameter, which I have found to be just large enough to bloom. There is a good chance that Wim’s largest bulbs will produce two flowers per bulb. So far I’ve only gotten single blooms on all of my s x d clones, but then I’ve never gotten the bulbs up to the size of Wim’s.

¹³ The ten bloom-sized bulbs (10 mm dia.) given to Berney in 1998 could have easily produced about 100 bulblets, which would have meant my prediction of 1916 bulblets was essentially “spot-on”.

From the point-of-view of selling a new clone, if a doubling were to occur every year, which is the best increase I've gotten with other of my Retic hybrids, it would take 17 years to reach over 100,000 bloom-sized bulbs (end of 17th year of bloom); a small number by Dutch standards. Of course well before that some of the bulbs would need to be sold in order to start building up interest in the clone. At any one time less than half could be sold in order to keep enough for continued propagation. So in reality it would take at least 20 years to have 100,000 bulbs for sale.

It is interesting to realize that if my projections above are correct, 81,000 bloom-sized bulbs of 89-Q-3 would be reached in just a further two years (end of 2005). At this 12 year mark, all 81,000 could be sold and there would still be 155,000 available for sales the following year!

92-CI-1 bloomed. Its blue wasn't as light as I had remembered. As in 1997, it's yellow was somewhat blotchy. This however is similar to what has appeared in other clones with "moderate" yellow influence. I do hope this blotchiness doesn't prove to be a negative factor in F2s. If it looks right, it actually could be a positive effect; something along the lines of the random blue spots that appear on Retics like *histrioides*; in this case random yellow blotches.

Here's something that's a bit difficult to say with a certainty, but it appears that F1 d x s tend to be more veined than s x d clones (i.e. than the reverse cross). S x d clones on the other hand typically have some dotting on their falls along with veining.

Last September I sent Berney Baugen [England] 10 of the largest bulbs of 89-Q-3. I hoped he would successfully force them for one of the English early Spring shows (many were not as large as I would have liked them to have been, but I expected the majority would bloom). Late in the year Berney wrote "the bulbs you sent me did not flower this year but am hopeful for next year." I'm surprised none bloomed, but it could indeed be that with pot culture they don't start into growth the way they do in the garden. Still, I'm puzzled, since I'm fairly certain they would have bloomed if I had them in the garden here. Because of not hearing from him until so late, I didn't send Berney any more bulbs. Of course I didn't really have sufficient large-sized s x d bulbs to send him. Now that 89-Q-3's numbers are becoming quite reasonable I need to develop interest in it and some of the other s x d clones.

At the beginning of February 2000 Anne Blanco-White [England] wrote, "three of your [s x d] Retics have flowered and I'm desolated: they stink, just like the maquis. Pretty, though – 89-Q-3, 89-Q-1, and 89-AC-5 – separately over the last week. I was very surprised because I too associate the Retics with a nice scents. It is usually a pleasure to go into the RHS Hall on the second morning and get a lung-full from the show bench. Maybe it's just because they are very small yet and it will change as they get bigger.

I've got them out of doors on a plant stand covered against most direct rain, but with the sides open to all that comes, even the odd wren looking for greenfly. It has to be fenced against the squirrels and the top is clear so that light gets in. If we got something like that blizzard that hit the States I could cover it with a plastic overcoat."

I didn't know what she meant by "maquis". When I looked it up in the dictionary I found only a reference to a French underground unit during World War II. Anne replied, "the French Resistance groups took their name from the ecological zone which stretches along the Mediterranean littoral from Spain to Palestine. The spelling varies, but the pronunciation is fairly consistent as mack-ie. The real point, at least in Western Europe is the characteristic smell. My husband describes it as very stale urine and I'm inclined to agree with him. Not as bad as going into a public lavatory that is inadequately cleaned, but rather an open sunny site regularly used as a piddle place. The maquis consists of assorted coarse shrubs and undergrowth on sun-baked, infertile rocky soils. Your flowers weren't quite as disastrous as that sounds, but I wouldn't have invited anyone to smell them for the scent. I had thought that you would have met it in the course of your European wanderings; evidently a treat in store."

I'll have to check that out next spring. In particular I'm interested in seeing how the s x d scent compares to that of other Retics. Yes, individual clones will have their own individual perfume. I know I like Retic bouquet in general, and that 'Jeannine' has a particularly strong scent. I just had never paid attention to individual clones.

Apparently the bulblets I sent to Shane Willis in Australia were lost. He wrote, "_____". I haven't heard anything back from _____ in Japan. As well, I need to follow up with a couple of other s x d testers around the world to see that I get progress reports next year. The results from Holland are described at the end of the Retic section. The ___ bulbs sent to Patrick Healey last year didn't bloom {did you expect this}

Only two more s x d testers were added this year – Janis Ruksans in Latvia, and Anne Blanco-White in England. I re-sent bulblets to Lynette Black in New Zealand since I left last year's too long before mailing them off. A reasonable number had dried out as a consequence of not being stored properly (i.e. in plastic). The particular culprit was our oil furnace which causes very dry air during Winter months. Because I didn't have sufficient bloom-size bulbs, both in size and number, I didn't pursue sending any to Florence, Italy. This is something I hope to be able to follow up with next year.

Early in the Summer I built a bulb separator / sorting machine specifically for all of my *sophenensis* x *danfordiae* bulbs. It consisted of several wooden trays with various sized mesh screen bottoms. The bottom tray was attached to a sturdy 4 foot high frame via heavy duty drawer sliders. I tried hooking the trays to an electric motor, but the coupling I used caused a heavy load on the motor and it started to smoke. I don't believe its shaking action would have been sufficient to separate the bulbs from the soil. I found it necessary to rub at least some of the soil over the screen with my hand. In effect I was helping to push the soil through the screen. It seemed that some soil was adhering to small stones or clumping together in small nodules. I wondered if this might have been sticky clay particles, but I don't really know whether that was true or not. The smallest screen I originally used was 1/8 inch, which had openings approximately 2.7 mm square. In most cases the bulblets were just bigger than this. However there were a few clones that had a significant number of bulblets which were smaller in size, which meant I had to filter the soil through window screen in order to ensure I separated them all.

A big problem was stones in the soil. The bigger stones were easy to get rid of; and there weren't many of them. It was the very small ones that were a pain in the neck. I hadn't realized there were so many. It meant I had to manually pick the bulblets (thousands of them), out from the stony remains. I wish there was some easier way to separate the bulblets from the stones, but I couldn't come up with any. Their weights, sizes, and densities were very similar. As a result I ended up filtering all of the soil that I was going to be replanting the bulblets into. Last year I estimated that I replanted 24,000 s x d bulbs (26,000 counting other 1989 hybrids). This year there's in the order of 55,000, which will increase to as many as 135,000 by next year (say 110,000 to be on the conservative side and allow for the fact some clones are increasing at less than 2.5 times). By prefiltering the soil now I should just be able to quickly separate the bulbs from the soil next year.

Because of the small stones, it means I was really just using the machine to partially help separate the bulbs from the soil. Afterwards I passed the bulbs through the screens a second time to sort them. I really need to get at least one additional screen to more properly separate the bulbs based on age. The only catch is, the screen I need is a nonstandard size. I can obtain it in a four foot width of stainless steel, but this makes the 2' x 2' piece I need reasonably expensive.

There were times when the soil I was sifting was quite moist (rain within the previous few days). By working the separator manually the process was manageable, though significantly slower. When this happened I did spread the soil out on plastic sheets to help it dry in the sun and breeze before screening it; occasionally turning it to expose the moistest bit to the drying elements. It was actually quite like a factory production line, with some being sifted and other bits in different stages of drying. As soon as a load went into the separator, wet soil from the bed went onto one end of the plastic sheet.

I must say the soil was nice and soft after it had been sifted. It was a pleasure to run through my fingers. Hope the bulbs like it as much as I did. Something in excess of a dozen dishpans full of small stones were taken out; and perhaps half as much a gain of larger stones as well as roots from a neighbour's poplar tree.

89-F-4 and 89-Q-3 were each planted into approx. 10 sq. feet.

Brian Mathew hasn't yet been able to make the designation '*x mcmurtriei*' official for my *sophenensis* x *danfordiae* hybrids [where 'x' means 'hybrid']. With cutting back in his freelance work he is expecting to be able to do so next year. Brian didn't pass on any news from Kew, so I recently wrote to him reiterating my expectation that the Çat Reticulata is likely a new species related to *danfordiae* and *sophenensis*. I do hope Kew has a chance to analysis its karyotypes, as well as those of a couple other genetically interesting hybrids I sent Brian in recent years!!

e.g. Iris x *mcmurtriei* 'Toronto Skies'

87-DQ-1 ('Purple Gem' x Turkish *bakeriana*) is increasing somewhat slowly. Last fall I gave it fresh soil, but that seems to have only slightly increased bulb sizes. Total count is 90, which is up only 10 over last year. There were 14 blooms this year, and I'm expecting 18 next year. The 14 flowers suggests there should be at least 94 bulbs; re: bloom-size bulbs "splitting". Clearly this isn't a lot different than the 90 I actually have, but it does mean some were lost. I probably should give 87-DQ-1 more room, but all I had time to do this year was replant it back in to the same area. The bulbs need to increase quicker to bloom-size, then they would split in two and hence the numbers would build up faster. It's quite a beauty from my point-of-view.

I don't have anything to report on many of my other key hybrids, other than to say they bloomed well, but I don't believe their rate of increase has picked up: 87-BB-1; 87-BN-1; 87-CQ-3; and 87-DD-1. I did move the first two to the s x d expansion area in hopes they might do better there. I should really try splitting them up so that I have some of each in another area as insurance against "crop failure".

I have taken a number of steps towards increasing awareness of my hybridizing work. Some of you will have noticed, two of my hybrids are pictured on the inside back cover of the April 1999 American Iris Society (AIS) Bulletin (of course incorrectly identified as Junos). The article I wrote on Reticulatas appeared in the July Bulletin along with 7 more pictures

including my eventually-to-be-famous (hopefully) 94-HW-1 (see page 52). I hope to have an article on Junos finished off for a 2000 Bulletin. I had actually started writing one about Junos until I found out it was really *Reticulatas* that were pictured in the April Bulletin. With all of the outdoor work I did this fall I didn't get a chance to do anymore on the article.

Unfortunately I didn't have time to write an article for BIS Yearbook. If I had realized how busy I was going to be starting in August I would have written something before then. I hope to make sure I have one in the 2000 Year Book.

I invited two local bulb retailers to visit my garden during bloom time, but neither took me up on the offer. I had sent them copies of my 1997 and 1998 Retic and Juno Bloom reports. I will have to follow up with some photos, another invitation, etc. in the New Year.

Wim de Goede and his wife Hanny flew to Toronto for a weekend in early June. We discussed several things including the next step toward eventually introducing my lovely pure white Armenian Caucasus Alba clone. Wim will continue to evaluate about five of my hybrids, plus I gave him bulbs of 94-HW-1 and 'Cantab' x *winogradowii*. In August he returned the clones he wasn't interested in, including all of my F1 *sophenensis* x *danfordiae* hybrids. Wim suggested I send a few to Kathryn Dryden for her opinion of them. I was happy to do that, and wrote to her to see if she would be interested, but unfortunately I never had a reply. I will write to her again shortly and include a copy of this report.

At the end of August I heard from another Dutch grower, Klaas de Geus, who had previously visited my garden 5 years ago. At that time I didn't have a lot to offer him; in 1994 the s x d clones had just bloomed for the first time, and my 1987 hybrids were only just in their 3rd year of bloom, hence bulb counts were very low. I did write to Klass back in September, but never heard back from him. I'll see if he is interested in any of the s x d clones. If he isn't, then I'll try smaller scale retailers such as Potterton & Martin and Janis Ruksans (I sent him a number of clones this year for his evaluation). It may be that in a year or two I can interest Klass in some of the other hybrids that Wim doesn't want. Just because Wim decides he doesn't want them doesn't mean they're not good. For example I very much believe some of the F1 s x d clones should be introduced. But clearly by the fact they're blues, and the fact there are already a number of blues in the market, makes it difficult to interest anyone in them. I expect Wim will want a couple of my hybrids, but it may be that he'll only take 2 or 3, and if they do well commercially, then perhaps he'll try a couple more. But as I've indicated in the past, once Wim decides which ones he wants, it will take a couple of years to get their numbers up, and at the same time get people interested in them.

Ron Gouswaard reported the Retics he was raising from seed I sent the New Zealand Iris Society were again "the first to produce leaves, well ahead of all other *Reticulatas*." Ron commented, Gladys McArthur "was a gifted gardener / writer living in Otago and in her articles stressed repeatedly that the best way to introduce new plants to your garden was to grow them from seed. Seeds vary in their genetic make-up and there will usually be some that will be better adapted to the particular growing conditions in your garden."

I do believe this is true, however you may easily find a number of existing clones that do well for you, and more importantly, it can be quite difficult to come up with some really good clones. If you find someone has put a fair amount of effort into creating good clones, it can be far easier to give those ones a try than attempting to create your own; unless of course you want to try "just for the fun of it." I say this knowing how much work I've put into getting to where I am currently.

Certainly the difficulty I've had in keeping species, seems to fall exactly along the lines Ron speaks of. For example, I am now hopeful that a couple of the many *histrioides* seedlings¹⁴ I now have will prove more hardy (ie. will survive over the long term).

The bulbs Wim returned to me were of excellent quality. I wish I could grow them that well. The largest were those of 91-DR-1 (Armenian Caucasus Retic x *histrioides* "Atilla"): they were humungous, with one being an incredible 25 x 36 mm! I'm looking forward to seeing how many flowers it's able to produce. The majority of clones were F1 s x d hybrids. Generally last year's bulblets are either bloom-size, or very close to it! 89-AC-5 had 7 bulbs 12 mm in diameter, while 89-Q-3 had 12 of 9 mm diameter. I've found that 10 mm s x d bulbs bloom. The largest s x d bulbs were 20 x 25 mm in diameter. It's quite possible that they will produce two flowers per bulb. I have yet to see double flowers on any of my s x d clones, so hopefully next year I'll be able to determine how big the bulbs need to be to give two flowers.

The number of bulblets was in the order I expected. Though clearly if the bulbs were grown in Holland, the stock would build up significantly faster than my trying to build it up here. Not only would bulblets start producing their own bulblets quicker, but bloom-size bulbs would be doubling in number and producing an additional small bulb. I'm only using two

¹⁴ Many were suppose to have been crosses with other hybrids, but turned out instead to be selfs [most likely] or intercrossed *histrioides* thanks to bees [less likely].

years worth of results on which to base my model, and I don't know the intermediate year's actual results, but I believe the numbers are realistic.

<u>End of:</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
Bloom-sized	3	7	12	25	108	268	825	2,437	7,077	20,950
1 year away	4	5	13	83	160	557	1,612	4,640	13,873	40,493
2 years away	5	13	83	160	557	1,612	4,640	13,873	40,493	119,185
3 years away	<u>10</u>	<u>76</u>	<u>148</u>	<u>532</u>	<u>1,504</u>	<u>4,372</u>	<u>13,048</u>	<u>38,056</u>	<u>112,108</u>	<u>329,572</u>
Total:	22	101	256	800	2,329	6,809	20,125	59,006	173,551	510,200

94-HW-1 Projected Increase If Grown In Toronto

<u>End of:</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
Bloom-sized	3	15	47	195	741	2,989	11,679	46,515	183,221	726,405
1 year away	4	10	76	228	1,084	3,876	16,292	62,220	251,228	981,764
2 years away	5	7	25	123	423	1,825	6,865	27,971	108,735	434,449
3 years away	<u>10</u>	<u>76</u>	<u>228</u>	<u>1,084</u>	<u>3,876</u>	<u>16,292</u>	<u>62,220</u>	<u>251,228</u>	<u>981,764</u>	<u>3,910,532</u>
Total:	22	108	376	1,630	6,124	24,982	97,056	387,934	1,524,948	6,053,150

94-HW-1 Projected Increase If Grown In Holland

At the end of 2008 there is almost a 1200% difference in the number of bulbs! Both of the two tables assume a starting point of the number of bulbs I have today. At the end of the first year the total counts are virtually the same. The difference lies in the fact the couple of additional bulbs are large ones. By the end of 2004 there would be more than 2,500 blooms – that's 2 years ahead of here in Toronto. The gap widens to 3 years by the end of 2008, 4 years by 2012, etc. Dutch growers take note!

Earlier I spoke about s x d clones passing the 100,000 bloom-size mark in just 12 years. If those bulbs were in Holland it would be down to 10 years, and you'd actually have 180,000 available for sale. Those could all be sold and you'd still have 350,000 available the following year! It's actually quite interesting to ask the questions like, "what if I sold 10,000 two years earlier (2006): how many would be available in subsequent years, etc." One possible scenario is:

<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>
10,000	25,000	90,000	340,000	1,100,000	4,400,000	15,000,000

This analysis can evaluate questions like: "if I sold some earlier, would that have much impact on the total number of bulbs sold at a point in time?" In this case you would have sold 125,000 by the end of 2008, rather than selling 180,000 all in 2008. This combined with pricing strategy, could be used to try and maximize profits over a 5 or 10 year period for example. Obviously though, you can't just expect to flood the market one day with a million bulbs if there aren't buyers for them all. But it might be good to start selling a smaller number like 1,000 in 2006, 10,000 in 2007, 150,000 in 2008, etc.

Interestingly 87-BN-1 and 87-BB-1 had bulbs up to 20 x 28 mm. If you look back at my 1996 Retic & Juno Bloom report you'll see that I mention the largest here had been 20 x 25 mm. Even back in 1993 87-BB-1 had a 17 x 28 mm bulb. These days I'm not getting them anywhere nearly that large.

This year Wim tried forcing a bulb of most of my hybrids. He kept their bulbs in separate bags so I could see how well / poorly they had done. It was quite clear that the bulbs in the garden faired much better, but Wim's forced bulbs were about the same size as I would expect here. Only one of the resulting two or three bulbs was bloom-size, but roughly the "normal" number of bulblets were produced.

Junos

visit www.IrisBloom.com

The most significant Juno news is three *capnoides* from Janis Ruksans bloomed. They were nice though not spectacular. It's a short species with winged flowers that overall are off white, with greyed purple highlights. Its fall ridge is raised and bright yellow-orange. It had up to 3 blooms. Unfortunately I didn't take any of its measurements, but I believe size-wise it was along the lines of *linifolia*.

It's seeds did have white ends, but they weren't quite physically nubbed like other species in *Tyloperma*. Three of five pod parent crosses worked: they were all selfs, giving 33 seeds. Only 4 of 19 crosses with *capnoides* pollen worked. Four seeds were produced on *graeberiana*. This was the only cross onto a *Tyloperma* parent. 14 seeds were produced on *vicaria*, but two others didn't work, and a fourth only gave one seed. The remaining successful cross only had one seed. It was onto *orchioides*, and also involved *warleyensis* pollen.

Two other bulbs from Arnis Seisums, which I had hand propagated last year vanished. You can't imagine how disappointed I was! They had been fine last fall. Certainly this reminds one of the importance of "insurance": planting in more than one spot in the garden.

Janis' *orchioides* Chimgan bloomed. It's a fairly nice robust plant as expected. It does seem to be the same as the Aktash form. The only thing I have yet to see is a "high" flower count. I believe it had up to 4 here. Nigel Service's Aktash pictures show up to 7! His pictures also show a flower colour that's a bit more pale yellow, but it's always possible this is due to the photo printing process. In particular I am hopeful that *orchioides* Chimgan proves to be more robust than *orchioides*-typical. There is actually a reasonable chance *orchioides* Chimgan is a new species. We should be hearing more about this sometime soon as a result of Arnis Seisums' chromosome studies at Kew.

Orchioides Chimgan's seeds are round, just like those of *orchioides*-typical. Out of 18 flowers I selfed six which gave 128 seeds. Two of five crosses using *orchioides*-typical pollen were successful and yielded 28 seeds. As well, two crossed involving pollen from several *bucharica* clones gave 33 seeds. The only other cross to work was with *willmottiana* (true) pollen, and it gave 15 seeds. This cross also had *capnoides* pollen, but I am doubtful it contributed, partly because another cross with *capnoides* didn't work. Unsuccessful crosses included the following pollen parents: *capnoides*, *graeberiana*, *magnifica*, *parvula*, and *vicaria*.

As a pollen parent, only 6 of 48 crosses worked! 20 were onto various *bucharica* clones. Additionally, only 4 of 8 onto *orchioides* hort. (large flowered yellow forms of *bucharica*) worked, giving 38 seeds. The remaining 8 + 7 seeds were from two *orchioides*-typical pods. Seven crosses onto *magnifica* failed, as did 10 onto several forms of *vicaria*. The remaining unsuccessful cross was onto *capnoides*.

Pseudocaucasica did well. Out of 9 flowers, only 3 that had been selfed set seeds: 49. Surprisingly its pollen was used fairly successfully: 5 of 7 crosses worked. Two were onto *orchioides* (9 + 4), two of three tries onto *bucharica* gave 14 + 17 seeds, and the fifth was onto *graeberiana* (12), however the cross also involved *bucharica* (which is known to work).

A fair number of Juno hybrids bloomed for the first time. None were stunning in the way my new Retic 94-HW-1 was, or the way *graeberiana* 'Dark Fall' hort. would have first appeared to its hybridizer. However I particularly liked a couple of *orchioides* x *bucharica* hybrids, though I already had several from previous years. There isn't a lot of variation amongst them, but there is some. Certainly at least one of the more *orchioide*'s-looking ones should be introduced. Potentially it would be a better doer in our North American gardens than *orchioides* is.

The 1994 Juno seedlings included *aucheri*, *bucharica*, *magnifica*, and *willmottiana*, as well as *orchioides* x *bucharica*.

There were several interesting crosses from 1993 in terms of parentage: *willmottiana* x *vicaria*; *graeberiana* x *vicaria* (I now believe this is the *willmottiana* hort cross, though the specific *vicaria* clone would have had to have been one of the taller, more robust forms; *magnifica* couldn't have been one of the parent's since it's progeny would likely have yellow fall blotch); and *magnifica* x *willmottiana* (looks along line of *magnifica*, rather than being something quite different). I'm pleased to report *vicaria* x *parvula* bloomed again, though it's nothing special appearance-wise. It was just that after trimming off two small side shoots last fall, plus seeing how small the bulb was, I wasn't expecting it to bloom this year. Also blooming for the first time was a *bucharica* x *vicaria*.

I also had another 1992 *albomarginata* x *graeberiana*. I do quite like this cross though generally they just look like *graeberiana* with *albomarginata*'s blue.

Hybrids that first started to bloom in previous years all did well, though it's too bad they don't increase faster: basically doubling at best. Hand propagating helps, but it takes a number of years for the side shoots to get up to bloom size (assuming the side shoots do "catch"). Junos take up more room than Retics, but they do generate more income per bulb. It's easy to understand why they're so much more expensive (plus the fact that some species are truly rare in commerce).

Just a reminder: most Juno hybrids are sterile because the various species are so genetically diverse. You typically find Juno hybrids have no pollen what-so-ever. When they do, if you were to look at it under a microscope you would find many of the grains are mis-shapen.

Warleyensis is doing only so-so; which is quite a disappointment since it's such a beauty. I keep hoping one will turn out to be a good doer here. Most bloom the first year they're here then seem to slowly die out. It's possible that a clone from Igor Minjariz is that clone I've always wanted to find. This year, its first year here, it increased quite nicely. I have my fingers crossed.

I'm glad to report that I had three *kuschakewiczii* clones bloom. Now if only I can keep them going.

Aucheri bloomed quite well, including the lovely Kew clone 78.3630 though it only had one bloom stalk.

Patrick Healey of Belmont Manitoba sent me a detailed bloom report. All of his Junos are continuing to do well. Of the ones from 1995, *magnifica* and *willmottiana* hort. are giving an "excellent display" with 4 and 7 bloom stalks respectively. *Vicaria* had only 1 bloom stalk out of 4. One of two *aucheri* stalks bloomed. His older *bucharica* also had a lot of bloom stalks. Clones obtained in 1998 generally had only one bloom stalk (i.e. one bulb) and two forms of *vicaria* along with "*bucharica* x *aucheri*" didn't bloom. Others like *graeberiana* and *orchiodes* hort. did.

One of thing I'm definitely looking forward to seeing next year is Eugenijus (Augis) Dambrauskas' three *albomarginata* hybrids: 'Evening Shade', 'Morning Sky', and 'Midday Blue'! Pictures of the first two are quite lovely. I haven't seen the latter. One of these is the plant I've been calling "*willmottiana* – Edmundas 94". Edmundas sent it to me in 1994 from Augis, thinking that it was *willmottiana*.

Potpourri

I haven't yet done anything about permanent / metal labels. I managed to get by with the aluminium labels I recovered last year. There are more I can recover next year, but I'm not sure whether I'll have enough. There's a chance I will, so I expect to pursue that route before purchasing more. At least 650 were used when I planted this year's crosses. A hundred or more were used mark the new hybrids that bloomed for the first time, plus roughly 200 were used for this year's acquisitions.

October: I now have a digital camera – Olympus 2500L. It's a single lense reflex with 2.5 Mega Pixels. Most digital cameras have their view finders separate from the lense, which means they're not as good for close-ups. The Olympus 2500L was fairly expensive, but I used some of the extra money I earned from doing a fair bit of overtime at work to buy it plus an additional 96 Meg of memory (it came with 32). When we went "live" with the new payroll and human resources software at the end of October I went into work at 8 PM on a Saturday and didn't finish until 1:30 PM the following day: 17.5 hours of overtime (a chunk of that specifically paid for the additional memory). I had been up for the full day on the Saturday. Needless to say, I couldn't get a lot done after I got home. Though I did try; but I was very, very tired. Weather-wise that had been a lovely weekend, so I felt I missed enjoying a big chunk of it; but it was worth it by being able to buy the extra memory which I'm sure will come in handy next spring.

The camera takes excellent quality pictures at up to a resolution of 1712 x 1368. I'm looking forward to taking lots of Reticulata pictures with it. With all of my memory, I can take just over 230 pictures using an 8:1 compression before needing to download, or as few as 17 uncompressed (in which case each picture takes up over 6 Megs). There is also a 3:1 compression, as well as lower resolutions such as 1280 x 1024 (also with 8:1 compression). These can all be mixed.

When I looked at high-end consumer digital cameras earlier in the year I found they had come down at least \$500, but it was still a case of them costing well over \$1000. The Olympus 620L which I had my eye on (1.4 Mega Pixels), dropped \$300 Canadian at the end of April. It had cost \$1700 plus 15% tax. This didn't include an accessory pack with things like NiMH batteries, power pack, etc., which was an additional \$230. Last year's model came with a smaller Flashcard (4 Meg) compared to the 620L's 8 Meg and it had been about the same price. As a result you could store only a couple of pictures on it; plus the camera couldn't handle large capacity memory cards. The 620L also had a few other improvements. It had most of the features I wanted, but I'm very glad I waited for this latest model. The Olympus 2500L takes excellent quality pictures with accurate colours, and the depth of field it captures with close ups appears to be much better than traditional film cameras. The only thing is I'll need is lots of time to use it. Effectively this means I'll have to take time off work during Reticulata bloom, since I'm normally quite tied up with hybridizing, and I'm expecting I'll be wanting to take piles of pictures.

One advantage of digital cameras is you can see the image immediately (on a 4.6 cm diagonal LCD screen [1.8 inch]). The 2500L's LCD allows you to zoom in up to 4 times to better see a picture's details, and thus determine whether the picture's slightly out of focus for example. This is necessary since reducing the actual picture, which is up to 74 cm diagonal (at 72 dpi), down to just 4.6 cm, means you miss seeing quite a bit of detail. The 4 times zoom allow you to view a portion of the picture as if it were 18 cm diagonal (users can pan the 4.6 diagonal to anywhere on the 18cm virtual picture). Of course to see the image in all its glory (detail, highlights, etc.), you need download it to your computer, but at least with the LCD you can see right away.

I am looking into fabricating a stand of some sort so I can create object movies of special Reticulatas. This requires pictures in roughly 20 degree increments around a flower. Quick Time from Apple Computer allows a user to grab an object and rotate it so they can see it from every angle. If enough pictures are taken, users can view the object from above as well as straight on. It's quite a neat effect. I need to look into how much memory these "movies" take up, since they appear to be made up of multiple still pictures.

Looking outward instead of inward, pictures can be stitched together to create a panorama. Inside Quick Time users can move the image to simulate standing still and turning around 360°. This sort of thing would be good to allow people to see all around your garden from different spots. Within Quick Time, assuming you've created the appropriate hotspots, users would be able to move to different spots in the garden where you had taken panoramas. So-to speak they could take a walking tour of your garden – the next best thing to being there.

I hope to explore these technologies next year, with the aim being to create a CD that I would make available for sale. It would contain many of the pictures I take next Spring with my digital camera, plus my writings over the years. Potentially it would also have my hybridizing database. I need to look into what software I can provide for users to view the database for example. I intend the CD to be compatible with Microsoft Windows as well as Apple Macintosh.

I would also like to create a web site. I expect cost would limit how much data I am able to provide on the site, hence the need for making CDs. Typically sites which allow users free personal web space, provide 10 Meg of storage – that's enough for a mear 20 pictures.

Early in the year I was given a 300MHz Dell Laptop for work due to needing to be at two different locations¹⁵. It's a nice machine, and it's handy to be able to show people colour pictures of my hybrids. However pictures don't look quite as nice as they to on a regular CRT display.

I had never realized this before, but we could all use a records / document management system on our PCs. Yes, as you might guess, I had been asked at work to look into document management systems. They would allow us to find information quickly by getting at the content of the documents. We would be able to interrelate the documents as well as attach our own comments / reviews of them. The system would also allow a retention period to be specified so that the documents would automatically be identified for consideration of destruction. The unfortunate thing is currently there are no software products available to do all of the things I'm speaking of, and I don't think there will be any, any time soon.

All of the systems I looked into were for small companies with 300 or more employees since they cost in the order of a quarter of a million dollars, not counting \$60,000 for the computer server to run them on. For our own computers we don't want to pay anymore than about \$1000; possibly only \$200. Ideally the document management system should be part of the operating system.

The last half of 1999 was particularly busy... too busy in fact. I've never experienced anything like it. I was absolutely, positively swamped. It was to the point where I simply couldn't get to everything I had to; some things simply had to be dropped. I'm not sure how I can do things better in fall 2000. There will for example, be even more replanting to do! Several important letters still haven't been written, and I didn't get an article done for the BIS Year Book as I had wanted to, or my Juno article for AIS, etc., etc. Now with winter here, I can start to get caught up (so far that hasn't really happened because of other things that have come up). I sure am glad I got the Reticulata article done for AIS (see July 99 issue, as well as the inside back cover of the April issue).

Of course I still haven't gotten my Juno book finished. In fact I really haven't had much if any time to work on it for several years. In the back of my mind I had been thinking I might this Winter, but with still doing the gardening into December, and now having a few new projects to do around the house, plus needing to still get caught up with things like my 1999 Report, updating my data bases, etc., etc., I don't think I'll be getting to it. Without question I need to retire!!

I again planted over 10,000 Reticulata seeds as well as about 2000 Juno seeds. There were so many successful Reticulata crosses that I ran out of letters in the alphabet for my naming scheme: from 99-A through 99-ZZ. In order to stay with two digits for the cross, I started using special characters: 99-#A (“#” was the only character needed). Since I knew this was going to be an issue when I started to plant, I grouped a few low number crosses together. I didn't want to use numbers as part of the cross labelling scheme in order to keep the format “clean”: two numbers for the year, dash, two alphabetic characters, dash, clone number (up to two digits). As well I felt it best to try to keep to two characters for the cross number rather than go to three. There are a number of other special characters I'll be able to use, and I doubt I'd ever have more

¹⁵ Ontario Hydro broke up on April 1st – the System Control Centre is now known as the Independent Electricity Market Operator (IMO).

to plant than they'd allow. The low number crosses have a low probability of germinating, but if any do, I expect to be able to determine which of the 3 or 4 crosses they are from.

As well, for the first time I reused the same characters for Juno crosses. This means I could have two 99-AK-1: one a Retic, and the other a Juno. In the past Junos had a range within the scheme, say 98-MA to 98-TZ (exact range varied from year to year, and could be in more than one segment). All others were then Reticulatas.

I replanted quite a few of my Reticulata hybrids, but I didn't get to all of the ones I had hoped to. As mentioned above there were at least 50,000 from 1989 s x d clones (no, I didn't have time to count them all; just some of them). Roughly 2/3 or slightly less, would have been bulblet-size. The total should increase to at least 110,000 by next summer. I also had at least 2,000 bulbs from various firms to plant (I'm expecting to keep my new acquisitions to a minimum in 2000).

I planted the last of my bulbs on Sunday Nov 28. That was the final batch of 50. There were a number of nights when I was up until 3 AM in the morning planting because of the relatively mild weather during November. I of course had to use a floodlight in order to see what I was doing. There was more replanting I would have liked to have done, but in many ways I was glad to be finished. I did get some of the most important 1991, 1992 and 1993 clones done. Next year all of the bulbs in each of those areas should be replanted along with the ones from 1994, as well as again the ones from 1989. I wanted to just put my feet up and relax for several weeks; plus get caught up with my sleep. I couldn't quite do that though since I still had to get the garden ready for winter – specifically: mound the roses with dirt; dig gladiolus and dahlia bulbs; put down leaves and straw; tidy up things like the raspberry patch; etc. I also had outdoor Christmas lights to put up. In addition I had (and still have), a lot to clean up in the garage and basement – they're a disaster.

Would you believe on Saturday January 1st 2000 and Sunday the 2nd, I was working in the garden! Daytime temperatures were up to about 6°C. I removed a lot of dead leaves, particularly from Iris, and finished putting leaves and straw on the beds. Some of the aluminium tags marking my bulbs had heaved with the freezing and thawing. The ground was quite frozen (only the top cm was unfrozen), so I couldn't push them back in; I could only push them flat against the ground and then put the mulch on top. Even this past weekend the daytime temperature was about 6°C.

The milder trend continued until Jan 12th when 5 cm of permanent snow fell. Up until then, what little bit of snow we had melted, with any other precipitation falling as rain instead of snow. This meant driving to work was relatively pleasant, and without any significant delays. From that point on, daytime temperatures stayed below freezing. On Jan 17 the nighttime temperature dropped to -23°C. Strong winds in the morning meant the wind chill was equivalent to -40°C.

This is supposed to be an enjoyable relaxing hobby, not an extra job. I need to spend time with my family. I've been doing some of that of course, but probably need to do more. I had a week of vacation time left last year and would have liked to have spent that time working in the garden, but much of the time I was too busy at my job to be able to be off.

Cubs & Scouts has taken up a lot of my time. My boys are in Cubs and I'm trying to get a Scout troop started. At the end of November I took Troop Part 1 training for Scouts. Our group, 2nd Willowdale, has Beavers (age 5 to 7), and Cubs (8 to 10). I'm the Akela, which is the main leader for Cubs. My older son is now 11, and ready for Scouts. I plan to do some Scout activities with the two most senior boys shortly. For one thing Scouts have different opening ceremony involving the use of the Canadian flag (I now know the proper way to fold and tie a flag for "breaking" it open in ceremonies). I do have help with the group, but I've been taking on a major portion of the work.

A science shop here in Toronto used to sell a "distillation kit" for capturing garden fragrances: "detailed instructions show how to capture essential oils in usable form to make perfume etc." Unfortunately it is no longer available. It involved a glass flask with a coiled 1/8" copper tube coming out of a stopper in the flask. Users needed to supply the raw material (flowers), lard and undenatured ethyl alcohol. The process apparently involved mashing the flower petals and heating the flask in a double boiler. I believe the alcohol was then used to extract the essence from the lard, but it may be that all three were simply mixed together in the flask.

It would be nice to be able to take a whiff of those lovely Retic aromas at will!

-- updated hybridizing stats page
--photocopy photos of the garden

Many average seedlings, are similar to one and another, and in particular (in the case of F1s), similar to the Armenian Caucasus Retic. I can see differences in some clones, which thus may be good parents for F2s [want to have a number of different lines – not just limit to one or two interesting expressions]. And of course a few good clones worthy of introduction.

-try selfing *sophenensis* to see if there is any variation in the progeny.