PAEONIA

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This is the way my 1984 hybridizing schedule shapes up …

CONTINUE DEVELOPING MORE YELLOWS:

1. Laning's Best Yellow Clones – Doubles
2. Laning's Best Yellow Clones – Semi & Japs
3. Seedlings from '**Roy Pehrson's Best Yellow**'
4. '**Nosegay**'
5. Seedlings of '**Nosegay**' – (Farm)
6. '**Roy Pehrson's Best Yellow**'
7. Laning's Good Yellow Singles

UP-GRADE WHITES (Pollen from the Silver Dawn F3's)

1. Roy Pehrson's '**Silver Dawn**' F3
2. Laning's '**Silver Dawn**' F3
3. Macro. Hybrids - double and semi-double forms
4. '**Archangel**' Hybrids
5. '**Moonrise**' x '**Nosegay**' F2 - try for dwarfs
6. Quad x '**Silver Dawn**' Hybrids
7. '**Sanctus**' x '**Silver Dawn**' Series

(Don Hollingsworth: Please evaluate and compare the '**Silver Dawn**' F3 of Roy P's with the one from me when they are in bloom!)

POLLINATE THE FOLLOWING WITH LANING'S BEST YELLOW

1. '**Bravura**'
2. '**Blaze**'
3. '**Burma Ruby**'
4. '**Burma Midnight**'
5. '**America**'
6. '**Dad**'
7. '**Mikado**' x '**Good Cheer**'
8. '**Mary Jo Legare**'
9. Roy Pehrson's Light Red
10. P. C. .Lobata-Double
11. P. C. Lobata Semi-double

INDIVIDUAL CLONES OF ASSORTED PARENTAGES (USE TETRAPLOID POLLEN)

1. '**Picotee**'
2. '**Eclipse**'
3. Tenuifolia
4. '**Red Charm**', '**Chocolate Soldier**', '**Walter Mains**'
5. '**Halcyon**' and its F2

* Yellow is recessive and is unlikely to influence the color of pod parent's seedlings.

(Continued, page 10)

P. suffruticosa var. Rock's

David Reath – 1/4/84

In the fall of 1963, two small grafted plants of Rock's var. were imported from Sir Frederick C. Stern of Sussex, England. He had recommended them as very hardy tree peonies.

The plants have done extremely well in our northern climate and show a remarkable degree of winter hardiness so necessary for plants grown in this area. Other varieties of Japanese Tree Peonies and the lutea hybrids show considerable winter damage. It is necessary to prune the tree peonies heavily each spring to eliminate the dead tissue. Rarely is it necessary to remove much if any such tissue from Rock's var.

We have embarked upon a hybridizing program to develop a strain of tree peonies more suited to gardens of the north. Two lines are being followed in this program.

A. First, we are intercrossing Rock's variety with various forms of Japanese tree peonies grown by us. Pollen of Rock's var. is very fertile on named varieties of J. T. peonies. We also harvested a very large crop of seeds gathered from plants of Rock's var. pollinated by Japanese varieties. Two varieties of Japanese tree peonies appear to be more fertile than others in this line of crossing. Pollen from these two, i.e. '**Shintenchi**' and '**Companion of Serenity**' (Gratwick), have produced more takes than pollen from other varieties.

B. The second line involves the use of P. lutea (No. 14) as the seed parent in crosses with Rock's variety. Many seedlings have been lined out and will bloom within the next bloom season. Lutea No. 14 is one of several selected seedlings produced by Mr. William Gratwick of Pavilion, New York. It is the result of intra-crossing various forms of the species P. lutea and is therefore pure species. It was selected because of it's more desirable plant habit with the blooms held well above the foliage in contrast to those of most lutea forms available.

The semidouble form of Rock's variety that was reported in the last issue of the APS bulletin is being used in similar crosses with Japanese Tree Peonies and lutea No, 14. It is just as fertile as the regular form of Rock's variety.

LETTER FROM: Gordon Bootes PTY, LTD, 4 Fishburn Street,
Red Hill, Canberra, A.C.T. (062), 95-3848

DATE: November 8, 1983

Dear Chris:

Thank you for the copy of Paeonia received a few weeks ago. I think I mentioned earlier that ordinary mail is quite satisfactory. I do have some difficulty in reading it, however, as my eyesight is failing at rather an alarming rate, so if you have a particularly clear copy in the future I would appreciate this.

One seedling herbaceous peony from Quad or '**Rushlight**' seedlings flowered this year from seed received from the society. Unfortunately birds pulled up all my white markers so I don't know what is which. The whole plastic markers were buried with just a little white tip showing; this must have intrigued the blackbirds as they pulled up every one.

I unfortunately did not have much success with the Domoto seed, only getting up 4 out of 25 seeds in three years. This was disappointing as I was most interested in his line. I believe he has a scented group. I have a few with very pleasant perfume but most have either none or stink like oriental poppies. I wonder if you could let me have his address? (Toichi Domoto, 26521 Whitman St., Hayward, California, 94544).

My own seedling T.P.'s which flowered this year from plants grown from Silvia Saunders seed received in 1956 or thereabouts were most satisfactory, three being most attractive, rigorous, and large flowered with stiff stems held well above the foliage. One white, one pink, and one a brilliant clear red, all without any basal color.

The tall white is a late blooming type and this I hope to use next year on P. lutea Ludlowii. The plant of Ludlowii that I have found this year is most interesting but does not correspond absolutely to the description in John Wister's book.

I am sending you two seeds of P.L.L., these may or may not be any good but I can possibly get more in March. These were picked up under the plant.

The flowers of Ludlowii are clear brilliant buttercup yellow up to 5 inches across held on single upright stems only just under the foliage, and when flowering well the plant is a mass of yellow. There is normally one carpel, sometimes two, and absolutely no scent (as distinct from lutea). The leaves are large trifoliate and three lobed of a yellowish green, The plant is extremely rigorous growing to 6 feet in 4 years and to 9-10 in 10 years. It does not branch a great deal but suckers rigorously from around the base producing a large bushy plant covered in leaves from the base. The seed came from Wisley England and of the first 2 (only) plants which grew one was the clear yellow, the other of a brownish color. The yellow flowers true from seed, the other no longer exists to my knowledge. The two flowering plants that I knew of both set viable seed, so it should be interesting to try hybridizing. I personally doubt this is very closely related to P. Lutea.

WITTMANIANA CROSSES MAD BY PROF. SAUNDERS

The Albiflora x Wittmanniana cross is a difficult one. Some information on the cross:

Professor Saunders wrote: 122 crosses - 576 seeds - average nearly 5 seeds per cross. (Must have had a very bad germination from so many seeds, for I have never had more than a small group of these hybrids.)

'**Green Ivory**' is numbered 4924 - pollen 2-3% good.
'**Elizabeth Cahn**', #4931 - pollen 5-7% good - flower much green and not unpromising.
Magnolia (this must have been changed to '**Magnolia Flower**') - #8388 pollen 3% good.
'**Ballerina**' #8891 - reciprocal cross Wittmanniana x '**Lady Alexandra Duff**' - no pollen, CPU yellow, really grand as it matures.
Three F2's recorded and one backcross - Albi x F2 of '**Green Ivory**'.

From Saunders notes:
False lobata x Wittmanniana gave, muddy purple pink flowers. Numbers 5329, 533?, 3342 and 3349 are numbers of seedlings that had been recorded out of a group of 26 seedlings.
Macrophylla x Wittmanniana gave 13 seedlings the flowers of which were, as he wrote, quite yellow, and the pollen was usable - between 20 and 30% good. Records show that 7 F2 plants were gotten from this parentage group.
Microcarpa x Wittmanniana gave 22 seedlings, all of which were poor.
Mlokosewitschii x Wittmanniana - one plant - probably gone now, he wrote.
Officinalis x Wittmanniana - Eleven plants. Flowers mostly purple red, pollen from 2 to 40%. One F2 was recorded with no notes.
'**Otto Froebel**' x Wittmanniana - 20 seedlings developed from this cross. Five F2's were recorded from this cross, pollen generally poor.
Willmottiae x Wittmanniana - 13 plants - pink flowers, ordinary - pollen very poor to no good.
A bit of .studying will reveal that Wittmanniana is a tender species and hybrids with it as one parent inherit this tenderness. Much coddling in most cases is required.

ED: Wittmanniana is a species that is difficult to obtain, is difficult to keep alive in cold climates, and imparts its tenderness to the hybrid seedlings that involve this species. Ballerina grows but does not flourish or thrive in my Michigan garden. Since I don't know how to handle this tenderness problem, no effort is expended on the Wittmanniana species.

COMMENT FROM DON HOLLINGSWORTH

In all due respect to the analysis by our congenial editor, I hereby deny the allegation that I qualify as a "geneticist" (vs. himself "hybridist"— December 1983 Paeonia). I am simply one who is breeding peonies, using the sources of information which are at hand concerning the particular plant materials I am trying to breed from. My position on this matter is, using genetic science's information does not a geneticist make!

My choice of breeding techniques are limited by the fertility of the particular plants or strain being used. I happen to be working mostly with relatively infertile kinds, which means that I get my experiences principally in terms of that situation. This influences in two ways what I have to say when I write about peony breeding. One is that the problems and results which I write about are in terms of the less fertile plants. Second, I am not willing to have these rejected as subjects of worthwhile effort. I know better. I have results and describe how they were obtained.

However, in writing about my experiences, I do not in any way mean to disparage the mass production techniques. Far from it. I hope that by the time I am able to assemble a selection of relatively fertile lutea Hybrids, for example, that I can have the space and time to apply mass production techniques. Meanwhile, I am getting ready as best I can by applying some slower methods for what may seem modest rewards. However, I am content with it in that the space demands for what can be done now are not particularly great and are within my present means. .

One other thing, when I share information concerning what I am doing (either in answer to questions or un-asked!), it is in the hope that such results will seem more dependably achievable to persons who may have an interest in peony breeding. The surface has only been scratched with the crosses which have already been reported.

There is probably far more potential for the improvement of the presently available peonies in repeating the types of crosses which have already been reported than in finding new crosses to make. Here I refer to both the cross of particular parent varieties and the cross of varieties similar to them, and to breeding from the descendants of the present hybrids. In other words, I am strongly of the opinion that the best rewards will come from repeating the crosses which have already proven to give desirable offspring. In keeping with this and with the desire to see an increasing activity in peony breeding, I try to share as much as possible of my conclusions. In turn, I appreciate very much the information which has been and is being shared by others.

<u>More on Potential for Fertility:</u>
Going to Roy Pehrson's Step No. 2 (December 1983 Paeonia), the production of seedlings from the "sterile triploid" generation, it seems a tetraploid strain of the Perry (Lobata hybrids) group shouldn't be far off. Many plants of this group will produce an occasional seed if you just leave them alone and check the pods in autumn. When one deliberately pollinates them with fertile pollen, the results are considerably better.

At first, I used '**Moonrise**' pollen, upon the report that it is an F2 of the group, Well, it turned out that when the seedlings flowered, the color quality is not consistent with the Perry Lobata Hybrids nor with either parent species. My assumption is that '**Moonrise**' is not a true F2, but at best the result of an outcross to some other early hybrid group which is responsible for the heavy, milky undertone in the petal colors. What I have is a new strain, not an advanced generation of the Perry Lobata group. Now I use pollen of another Perry Lobata Hybrid or sometimes of a Little Reds variety (also by the Perry Lobata but from officinalis varieties instead of lactiflora varieties).

One of the Perry Lobata Hybrids in which I am especially interested is '**Cytherea**', not only a superb ornamental variety but showing also the capability of imparting full doubling to its progeny. Trouble is it is late in the group, which limits crossing choices. However, it will produce seeds better than some in the group, as will '**Bravura**', '**Cardinal's Robe**', '**Sophie**', '**Laura Magnuson**', '**Paladin**', '**Red Red Rose**' and '**Lustrous**' of the ones I grow. '**Carina**' has been a successful pollinator, but no seeds. Except for '**Bravura**' and '**Cardinal's Robe**', these all are from double lactiflora varieties. Therefore they are particularly attractive to me as progenitors of a syn-tet strain.

In 1983 I had 5 seeds of '**Cytherea**'. These are producing some quite strong roots which looks very promising for the production of plants.

The point of this is that there seems to be no question that the ingredients for producing a syn-tet strain from the Perry Lobata Hybrids are present. How it will happen is pretty well understood. There are some purposeful things which we can see to do which may hurry the process. One; pollinate the flowers of chosen varieties with pollen of similar varieties to increase seed production and to bring desirable genetic material into the next generation. Two; assemble F2 seedlings, observe them for fertility and produce as many seedlings of their seedlings as can be obtained until satisfied with the quality of offspring in relation to goals for introduction of the varieties.

Hybrid's Seeds Germination:
Concerning the Laning seeds of Graham-Jones Delav-lutea seedlings (December 1983 Paeonia), I had 46% survival in the seeds which were kept here. The equivalent of 25 of the original quantity were sent on and there are 33 remaining, most rooted and, as of February 5th some with plumules emerged from between the cotyledonary petioles. Some will be ready to plant out well before the season is ready. (Very early planting, as mid to late March is desirable, or as soon as the soil can be worked, except there can be problems if the dormancy is not sufficiently reduced — see my new article in the new handbook, just being mailed by the APS office.)

When growing seeds from hybrids under indoor conditions, where their progress is monitored frequently, one can easily become anxious due to the large numbers of decaying seeds which are often seen. However, what counts in the last analysis is how many plants one obtains, and whether one or more meets the minimum criteria or purpose for which the cross was made. (Usually my purpose the first time I grow a particular cross is not very demanding — to see what might be possible from the parents used.) My friend and nearby counselor on these matters, Fred Leimkuhler, is prone to point out that it takes only one seed to produce the finest plant that will ever be produced. What really counts is not how many rotted — that can be a complication, of course — but how many become plants.

The results with Chris' Delav-lutea seeds, above, are really very satisfactory, even compared to some straight lactiflora seeds (not all of those are "good" seeders, either). Toward the other end of the scale, I have another example. I have a late flowering seedling which looks like straight lactiflora, Japanese form, multi-segments, muted ivory pink guards and ivory center of staminodes, a vigorous, big plant, supposed to be of the cross (139 Wolfe Seeder, a seedling lacti, x 90 '**Cytherea**'). Wolfe Seeder is the parent of my best '**Good Cheer**' hybrid doubles (bomb doubles), so far. I made a bunch of crosses on this seedling (#1059) using '**Good Cheer**', hoping the seedling is genuinely of '**Cytherea**', and going for concentration of the Perry Lobata color genes, '**Cytherea**' multiple segments and retention of the stamen transformation genes from either or both sides of the cross — maybe even a double.

At harvest there were 336 seeds judged as candidates for the germination processing, started September 30. By late October 46 seeds remained. In early November they were moved to cool for rooting. January 24th another 21 were thrown out and there were 12 rooted — 6 long roots and 6 short. The rooting temperature had been lowered by early December to accommodate the Little Reds crosses which want lower temperatures into the 50's °F before some of them will start. Presumably part of the seeds had rooted more like lacti seeds and part required typical Little Reds levels ('**Good Cheer**' is a Little Red Hybrid), the other likely explanation is that those short roots are from "slow" embryos, not a favorable sign for eventual planthood. Maybe I will get 6 or more plants. Just one will be welcomed, if it gets me farther along with the project. It is progress, and in this business that is a winner.

In contrast, some hybrids simply are not prone to make such a big proportion of incomplete seeds (using the term to imply whatever is missing which results in an outwardly normal seed proving incapable of producing a plant — maybe false seeds would be a more appropriate term). For example, of 5 '**Cytherea**' seeds started into germination, all survive as of late January and 3 have strong roots; 7 '**Demetra**' x A199 seeds, 4 left, all with strong roots; '**Elizabeth Foster**', '**Winged Victory**', and '**Sophie**', 1, 2 and 1, respectively at harvest, all surviving and with strong roots; '**Sparkling Windflower**' x Windflower, 1 with strong root; and so on. There were probably a few obvious discards at harvest in these, although I didn't look because my notes on how many were discarded in the field are not complete.

In thinking about the significance of having quite a large number of molding, rotting seeds appear during indoor germination, it is useful to remember that if planted in the soil, one probably would have lost the same number to rot, but would have never noticed. By the time the plants emerged a year or more later there would be no way of sorting out among the various possible explanations of what went wrong with these seeds which didn't come up. It really doesn't matter at that point, except you may be led to abandon a particular cross because it seems unproductive by common garden seed standards. I hope that breeders do not get confused by the difference in the performance between peony seeds and garden seeds to the end result that they give up on peony breeding. When this happens, it is to the serious detriment of potentials for progress in peony breeding. We need all the help we can get.

Also, so long as the rewards are coming slowly, the novice participant has just about as good a chance to get the big rewards as does the most expert plant breeder. Now is the best time to be involved.

THE ITOH CROSS

Chris Laning

Just what do we know with regard to the Itoh cross . . . It is an exceedingly difficult cross and any measure of success is to be congratulated. Bill Seidl and Don Hollingsworth are the only two Americans who have proved their success (at least to my knowledge) by actually displaying their clones. Bill Seidl's Itoh shown at the National Peony Show was smoky pink (or a pink yellow), a color I can't describe – it was beautiful. Don Hollingsworth has several, or maybe many Itohs, two of which are truly outstanding; his #205 is the best in the world and his #206 is a close second! No other Itoh is equal to them.

Because of the location of the yellow pigment which is in a different location within the petals than is regularly found in peonies, one would expect that there would be no mixing with the reds, pinks, or whites — so no orange Itoh is likely to be forthcoming. See F.C. Cooper's article on Peony Flower Pigments, pages 141 and 142 of "The Best of 75 Years", edited by Greta Kessenich.

When trying for new Itoh colors, think of them as yellow with another color painted on afterwards. A whole new range of colors is possible with a different type of cross, namely Lactiflora x suffruticosa. Roy Pehrson tried this cross many times and produced over 100 seedlings. Much to his consternation, very few produced complete flowers; some with small petals and many with narrow strap-like petals, and one or two with no petals at all. And not any produced seed. I too have made this cross with many of the same results that Roy Pehrson obtained. But I believe the right combination may give respectable results

'**Petite Rene**', '**Miss America**', and '**Gertrude Allen**' are lactifloras that when pollinated with lutea hybrid '**Alice Harding**' gave good results. If great care is exercised in removing the stamens, I suppose '**Minnie Shaylor**' would be excellent.

The most fertile of lactifloras give only poor results with regards to seed production in the Itoh cross, so anything less fertile would be almost of no value.

All this can change when more information and experience is obtained. As Roy Pehrson said with regard to experimenting, "Try anything", and get unexpected results

- Chris

P.S. ALL PAEONIANS:

Any additional information on this cross will be greatly appreciated!

Dear Chris: February 21, 1984

I have just finished looking into some of the Saunders references concerning the crosses which produced patterned and bordered flowers. By patterned I refer to veined and flared, probably should not separate bordered—it's just another pattern. This search was entirely of the herbaceous species crosses, not tree peonies. It came up because of questions Alan Rogers had put to me on the question of what to try with '**Picotee**' to try to increase the number of clones having the bordered pattern.

Without going into the reasons at this time, I want to share my conclusions about the species sources of the border and the other patterns mentioned above. Perhaps some of the hybridists will be interested in using the information this spring.

It appears that the patterns resulted from combining genes of the Macrophylla clones which Professor Saunders used with genes from either Corsica (Stern's P. Russi leiocarpa, I believe) and/or some of the clones of P. officinalis, particularly Rubra Plena and '**Otto Froebel**'.

The indications are that Macro has a dominant white, but that the incidence of pink and red in the hybrid progeny which had Rubra Plena as the other parent was considerably higher than in the hybrids with Lacti, of which only one or two reds were reported from several hundreds raised.

Patterned flowers from the Quads Hybrids are in keeping with this hypothesis. When we consider that '**Silver Dawn**' was originally found among seedlings of '**Harbinger**', itself a Macro-'**Otto Froebel**', and that '**Silver Dawn**' "F3" of Pehrson produces seedlings having veined and bordered patterns, it begins to look as; though it was not necessarily a rogue of Macro-Willmottiae, as Prof. Saunders seems to have eventually concluded. Possibly '**Harbinger**'-Willmottiae.

So, what does all this indicate? I suggest making crosses that will combine Macro descendants with Officinalis descendants. There is a myriad of possibilities. The idea is to concentrate the sources so using plants which themselves show the desired patterning should be a priority. However, there is no reason to pass over crossing Macro Hybrids with fertile Quads, '**Picotee**', etc. Some will not carry the desired genes even though descended from plants which did. However, if enough tries are made, using enough different clones, and the hypothesis is correct, then a whole new thrust of breeding may be opened. Wouldn't that be fun!

There are also a few descendants of Corsica around. Miss Saunders sent out Lacti x Corsica, Clones I and II. I can report that II will give a few seeds. Also, Saunders felt that Corsica and Coriaceae were close. We have the Lavenders and '**Eclipse**' as perhaps long shots for the Corsica role in this cross. Miss Saunders may have sent out P. Russi leiocarpa, also. If so, perhaps it was descended from the original Corsica. The possibilities are legion. Let's try it.

- Don Hollingsworth

Chris Laning's 1984 hybridizing schedule, continued from page 1.

TRY FOR BLACK (Pollen to be used will be '**Sable**' and '**Eclipse**')

1. '**Sable**' - several plants - self pollinate
2. '**Eclipse**' - one clone - self pollinate
3. '**Sable**' x '**Eclipse**' - 1 clone
4. '**Sable**' x Super "D" - 4 clones
5. '**Horizon**' x Super "D" - 2 clones
6. '**Sable**' x Lobata (this group of 9 clones resists darkening - all lobata type red.)
7. '**Chocolate Soldier**' and '**Walter Mains**' series

TWO TONE CLONES (Use Laning's Best Yellow pollen on these *)

1. Red Stripe
2. Flare flowered sorts
3. My two-color clone
4. Speckled bird series
5. Picotee types
6. Eugene S. - a red striped flower

ITOHS - use tetraploid pollen or syn-tet pollen

Row of P. delavayi and P. lutea - pollinate with lutea hybrid, P. lutea, suffruticosa pollens and tetraploid herbaceous pollen

Use P. delavayi pollen on tetraploids

Try for purple and lavender

Rows of lutea hybrids - try everything on these

Try: '**Age of Gold**' x '**Thunderbolt**' and the reciprocal.

Also - Gratwick's clones x '**Thunderbolt**' and '**Age of Gold**'; also P. Delavayi pollen

This is an exceedingly ambitious project and one that probably will not be completed this year — and maybe not ever. Well then, Chris Laning, (that's me) do something about it.

Hybridizers, study this article carefully and see if there can be a goal you could choose from this listing. We'll share the work load.

* Yellow is recessive and is unlikely to influence the color of pod parent's seedlings.