

REQUIRED READING –

- 1. "The Peonies" by John C. Wister, \$3.50 from American Peony Society.. \_\_\_\_\_ 250  
Interlachen Rd., Hopkins, MN 55343
- 2. The Bulletins of the American Peony Society. The PAEONIA is authorized by Miss Silvia Saunders.

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BREEDING TRIALS: HERBACEOUS YELLOW PEONIES

Don Hollingsworth

In plant breeding, every deliberate cross has the makings of an experimental trial or test for purpose of establishing new information. By making observations of what happens both with respect to fertility factors and the ornamental qualities of any progeny which are obtained, one will be enabled to make more informed decisions about future crossing with the tested parents. However, what one chooses to include in the observations which will be recorded is a personal choice arising out of individual experience, study and reasoning. Obviously, some people record data and plan more rigorously, while others rely on memory and fate to a greater extent. So far as I can see, there is no clear cut evidence that finer flowers are discovered more one way than the other. As a matter of personal observation, I suspect that a different factor is the most important in peony breeding (not necessarily so in genera which have already been intensely subjected to controlled breeding). This is that the best chance of finding desirable advances is obtained when larger numbers of seedlings are grown.

Constraints of time and facilities keep me from exploiting the possibilities of large numbers production, however. Therefore I am inclined to try to optimize information gathering with respect to the crosses which I do make. Keeping track of parents (pedigree) leads to the capability of repeating those crosses which give the most promising results. I look for results in fertility as well as in the quality of the progeny. Fertility ultimately is judged by the number of flowering age progeny yielded. However, the yield of sound, healthy seeds and how well the seeds respond during the germination cycle provide intermediate indicators of fertility.

Basically, my approach to breeding decisions is to first think in terms of a line of breeding, then to find the better prospective pollinators for reaching the desired goals. The pollen parents' influence can be extended farther (in numbers) than the influence of the pod parent. For example, in my early yellow herbaceous line I will tend to reject a prospective pollinator that has anything less than the best color of yellow that is at hand. If there is doubling close up in the ancestry (i.e. 'Claire de Lune' is out of 'M. Jules Elie') a paler color is acceptable. For pod parents I will use not only the available yellow flowers but those of ivory, pastel pink and creamy white when the parentage is either known or thought to include the ancestry from which the current better yellows have been derived.

(continued page 7)

## A BIG COLORFUL PEONY COMES FROM A SMALL BLACK PEONY SEED!

Greta Kessenich

Do you know what that little black Peony seed will do for you? It will take your mind off the high cost of living, your Senator, your Governor, wondering why they do not do anything about taxes and just why all this inflation, not only that, you will forget your aching muscles when it's spring and you start digging around your peonies. You have just looked at your new peony seed bed and not one plant is showing. You know that you prepared the bed with the greatest of care, in fact it was spoon fed with humus and every inch worked fine and made ready for those precious seeds in the fall. So not one came up! Why! That is natural, I'm told, so we just wait one more year.

It was just a short time back, so it seems, that I planted one hundred mixed herbaceous and tree peony seeds. No! They did not come up and I knew that I should have had just a few showing, at least, as the seeds were just right for planting. The bed had been covered with chicken wire so carefully, so as to keep the squirrels away. There are many here as I live in an area of large old oak trees. With an eagle eye, that bed was watched and not one thing was disturbed.

The following year, I began to see seedlings in various places, a couple in the rose bed, the soil there is soft and full of humus. Some in the chrysanthemum bed and there too the soil is rich, soft and much humus. Chrysanthemums do so well, when mulched and then that mulch worked in the soil every year. In the long bulb lily bed, more little plants; that soil is deep with humus and by one compost pile, two were growing as if I had planted them. From the overflow of the compost heap of every year, the otherwise clay soil had been transformed into beautiful soft soil, just right for peonies. All of these plants were from my seeds so carefully planted in the seed bed. The squirrels have been blamed but they could not get at them so it must have been, some small rodent, having a happy time with peony seeds.

Four of the plants bloomed this year, two tree peonies were shades of pink and rose. They have grown more vigorous and much taller than the grafted named varieties in the garden. The two herbaceous peonies by the compost heap are simply beautiful. The one is a true likeness of '**Cytherea**', in color, petal count and the leaf. I note that it has seed pods; hopefully the pods will produce seeds. The other one is equally as nice as it is a deeper shade of the coral rose pink. No seed pods.

Plant some seed. Take a seed pod from one of your own favorites and plant the shelled seed. You may get nothing that you like and then again the mystery of the seed! — you may get a beautiful creation like I saw this year at the show. It was '**Cheddar Cheese**', a white with an inner glow of gold. The most beautiful peony that one would ever hope to see, and that peony came from a seed, some time ago.

Chris has seed from many interesting and beautiful varieties of peonies. He will send some to you, just write him.

Believe it or not ——— One common question ———

Do peonies come from seed? You never told me that!

We need to start a whispering campaign, tell your neighbor, your neighbor's neighbor and on down the line.

A LETTER FROM A FRIEND IN AUSTRALIA —

12 June, 1980

Dear Chris,

I have been meaning to write to you for some time. I was most grateful to receive the tree and herbaceous peony seeds which arrived safely by airmail and were immediately planted. The Quad, 'Archangel', and 'Rushlight' seeds were most interesting. My main interest is in tree peonies. Most of my plants are seedlings grown from seed kindly sent to me by Silvia Saunders back in 1957. I had not till recently been able to find anyone growing either type. Last year I made contact with Mr. Simpson in Frankston, Victoria, who I found had an excellent selection.

The difficulty in Australia is the importation of plants. All plants must be fumigated with methyl bromide and if this does not kill them the quarantine authorities are experts in destruction. I would like to import some of the newer plants but feel somewhat concerned about paying \$75 for an unknown quantity, then having it killed by mishandling.

I wrote to Louis Smirnow for his catalogue but found this a little confusing. His Itoh-Smirnow hybrids were not described individually, and the photographs in one case was a picture of the same flower enlarged slightly and deepened in colour, and not identified in any case. He does not describe in most cases, breeding, introducers, perfume, and most importantly whether the flower is held above the foliage. The yellows I have, have the distressing habit of hanging their heads amongst the leaves like their lutea parent. I have 'Alice Harding', 'Souvenir de Maxime Cornu', 'Chromatella', 'L'Esperance' and a Saunders, possibly 'Golden Vanity'. I would be most grateful if you could inform me whether any yellow of either kind holds its head up and is a relatively pure yellow.

Last season I selfed the Saunders plant. A single pure buttercup yellow with a delightful perfume. I thought I had made it as it formed magnificent pods, but these were all empty.

I also crossed it onto a tall white semi-double tree and obtained a few seeds in each pod which appeared fertile and a lot of sticky black seeds of rather shrivelled appearance. All seeds were planted immediately in a trench lined with vermiculite and soaked in Benlate. I don't really think the apparently viable seeds were from the Saunders. They are most likely from contamination even though the flowers were fertilised before opening. I will again try the cross if I can get pollen up from Melbourne where tree peonies flower earlier. I would also like to try 'Alice Harding' on the white as it may have possibilities.

Whether I will see any of these flower I don't know as I am rapidly going blind, but anyway I suppose someone will tell me if the worst comes to the worst.

Something which may be of use or interest to your readers. For many years my tree peonies refused to flower. They would grow vigorously, then die back before autumn. One year I applied a commercial trace element mixture in the early spring. The results were spectacular, to say the least. No more die back and the following spring nearly all plants flowered profusely. A year or so later my house in the country was burnt so I sold my property and moved into town. I dug all my tree peonies and shifted them to my new home. Before planting I dug the bed deeply. It was a sticky red clay. I added a liberal dose of trace elements, some complete fertilizer, and a lot of blood and bone. The first spring every plant I had flowered. One only died. It got to six inches, flowered and passed on. I now only apply trace elements about every four to five years except when making a new bed.

I also had a *Magnolia denudata* which had sulked for five years, never producing more than one flower and point blank refusing to grow no matter how much I coddled it. Finally I got fed up and decided to kill or cure. I dug down about two feet deep around the plant. Mixed about 20% chopped pine tan bark with the soil, added trace elements and one gallon each of pelletised poultry manure and blood and bone, with a handful of Nitrophoska (complete fertilizer). The plant went mad, tried to flower all through the summer, put out masses of new shoots and leaves, and now that we are in the middle of winter stands naked and smothered in flower buds awaiting spring. This might be useful for some of those old peony clumps, and tree peonies certainly like this treatment.

I read in "75 years of Peonies" about Father Fiala's crossing '**Alice Harding**' with various herbaceous peonies with considerable success but at the time of the article these had not flowered. Do you know what the results were and his address, as I would like to write to him.

I was very pleased to receive a copy of "Paeonia" and certainly would like to subscribe. I enclose \$15 as a subscription till it runs out. Also out of this amount I would like some peony catalogues, new if you have the time, except Smirnow's, which I have.

All my best wishes for the wonderful job you are doing.

Regards,

Gordon Bootes  
4 Fishburn Street, Red Hill  
Canberra Act 2603, Australia

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Some of *Paeonia* readers may be wondering about some of the subjects that Mr. Gordon Bootes of Australia has brought up, so I'll express my opinion:

Smirnow Itoh hybrids are excellent plants that present their flowers in a good outward-facing position. Large leaves on woody stems are dark green and of heavy substance. On well established plants the number of flowers is entirely adequate, of intense yellow color. But, these Itoh's do not set seed. Oh, they will produce beautiful seed pods but these are empty ~ or if a seed or two is produced, it is soft and hollow. From all of my plants (about 20.) not one good seed has been produced. Judging from the difficulty in making this cross (*lactiflora* x *lutea* hybrid), we are most unlikely to ever see an F<sub>2</sub> Itoh. I must admit that I haven't tried using its pollen as a back-cross; that may eventually be a possibility, though not promising.

Father Fiala has been an enthusiastic supporter and hybridizer of peonies. Of late, however, he has dropped out of the picture. We get no correspondence from him and he has ceased to write for our Bulletin. It is sad when we lose the abilities of such a geneticist, maybe Father Fiala has a problem that cannot be resolved. Though articles, written by him are very informative (I read and re-read them), perhaps he doesn't have, and possibly didn't have, success in producing plants to bear out his statements. I believe hybridizers with great perseverance will yet find his propositions to be correct. We have lost a great geneticist!

-Chris

## LUCKY DIP

One "Lucky Dip" plant in my garden is in need of a great deal of observation and evaluation. Its parentage is (*P. mlokosewitschii* x *P. delavayi*) x ?, or else it is (*P. delavayi* x *P. mlokosewitschii*) x self or unknown pollen. Do you believe that? Neither do I! But what is it, what do I have?

This story starts on pages 8, 9 and 10 of September, 1972, issue of PAEONIA. Here is a reprint of the story's beginning since many of you don't have that issue.

Letter to: Dr. Henry Tod  
Carnethy, Seafield, Roslin  
Mid Lothian, Scotland

July 17, 1972

Dear Sir:

Just a little over a year ago you donated seeds to the American Peony Society. These seeds were sold at an auction for the benefit of the Society. We certainly want to thank you for your gift!

Your seeds have germinated, the plants are growing nicely, and now some of us are wondering what we have got. Our guess is that these giant seeds were *P. lutea ludlowii* — is that right?

Being editor of a newsletter called "Paeonia", I was wondering if you could (or would) write an article of your own choosing about peonies to be used in "Paeonia".

- Chris Laning

HIS REPLY:

July 25, 1972

Dear Chris Laning,

Thank you for your letter about the peony seeds -- they were, as you thought, *lutea ludlowii*. I am glad to hear they have germinated well and if your members would like to try seeds of the cross I mentioned in the note for "Paeonia" which I enclose, I'll be delighted to send them to you as soon as they ripen — also more *ludlowii* if it is wanted. The seed from the cross plants is, of course, a "lucky dip" for all my peonies are open-pollinated as we have bees so anything can happen!

- Henry Tod

## PEONIES IN A SCOTTISH GARDEN

Henry Tod Ph.D.

I have been very fond of peonies since, at the age of four I rather shattered my parents by carefully cutting every bloom, buds and all, from a huge old plant of *P. officinalis* and presenting the resulting bouquet, which I could barely manage to carry, to my mother.

When, some twenty-five years later, I got a garden of my own, I picked up two roots in our equivalent of the "five-and-ten-cent store" and those which came back with me to my childhood's garden where I now live, turned out to be really good "singles", one pale shell-pink and the other a somewhat deeper shade. Owing to changes in the layout of the garden, the big old plant, divided up, and some smaller ones have given me a bed about thirty feet long by six feet deep of herbaceous peonies which makes a really magnificent show each year.

In the years after the war I started raising from seed and got one under the dubious name of "*tenuifolia*" which is, I think, *woodwardii*. It forms a fairly low-growing clump of finely cut foliage with strong pink single flowers, but only increases very slowly and sets no seed. From the seed exchange of the Scottish Rock Garden Club I got seed of a cross between the unpronounceable *mlokosewitschii* and *delavayi* and this gave me two very different plants, both of the "tree peony" type. One is about four feet tall by five across with flowers of maroon, liberally splashed with yellow while the other is perhaps a foot lower and has only yellow blooms. Both flower and seed freely, but just how their offspring turn out I do not know.

Among the seeds that I got in the 'fifties from the Ludlow and Sherriff collecting expedition in Bhutan was *Paeonia lutea ludlowii*, of which I raised one seedling. This is now about eight feet or so tall, by eight or ten feet across, a huge, rather gaunt shrub which each year covers its upper parts with big yellow blooms and then sets masses of seed. The flowering period, is not particularly long, but fortunately the deeply-cut foliage is handsome in itself. It is, incidentally, growing in the poorest imaginable soil for it is on top of what used to be an ash-covered entrance drive until we moved the drive, to avoid an almost unmanageable corner.

Within the last few years I have bought a number of named varieties of tree peonies but it is early days to say how they are going to do. My garden is normally rather a damp one and peony botrytis tends to be a problem, but I am told that the fairly new systemic fungicide benomyl (Benlate) is of value for this.

One rather odd thing has occurred in my garden. *P. cambedessii* is regarded in this part of the world as being definitely frost-tender, yet I have had it growing and flowering in my rock garden for eight years or so, and without any protection at all. It has not increased appreciably in size, but it is still alive and healthy.

I have tried repeatedly to raise the lovely *P. obovata alba* but quite without success — perhaps some day I will be lucky! Peonies are a family I would never be without but, as will be realized, I am very far from being an expert on the genus.

\* \* \* \* \*

"Lucky Dip" is a tree peony, about three feet tall. The flowers have red, yellow and tan colors in each of them, foliage is finely cut, much like *lutea*, and the plant has many stems. This is the first year that it blossomed — or, if it did bloom last year, it probably was less than insignificant. (I am very careful to observe insignificant features.) Quite likely the plant will be much larger next year with bigger flowers. This year the flowers were about four inches across.

So, "what else is new," just another unusual clone. Hey, but wait!, this plant sets seeds, great big seeds, and a lot of them too! Most of the seeds are good and firm, the embryo of one seed which I cut open was first class. When gathered August 25, the seeds were very dark, red — now they are black and about the size of a filbert nut (with the shell still on), maybe even larger than *P. ludlowii* seeds!! Seeds from Dr. Tod were shared with other hybridizers. Did any of you find anything unusual in your "Lucky Dip" seedlings?? If any of you has some thoughts on this subject, please write!

-Chris

P.S. Dr. Tod passed away three or four years ago.

(Breeding Trials: Herbaceous Yellow Peonies: continued)

Through testing the better end of the available pollinators one can, in the near term, establish the identity of those having sufficient fertility to warrant their continued use and classify the seed production tendencies of the pod parents with various pollinators. In the long term, once the progeny come into flower, further culling of the parents will be made. At this point one is in command of knowledge that should make the production of larger numbers of progeny from the best yielding matings a particularly constructive investment of space.

As a practical matter, a cultivar which is earlier flowering is more broadly useful as a pollinator. '**Moonrise**', for example, is late blooming among the herbaceous yellows, thus it is not possible for me to use it as pollen parent on the earlier flowering yellows, except to the extent I can find a late flowering side bud, something that is relatively scarce in the early ones.

'**Claire de Lune**', on the other hand, is quite early in Kansas City. From a local "town" garden I can have '**Claire de Lune**' pollen dried and ready very early, before '**Laddie**' or '**Roselette**' are in flower. Though presumably not a tetraploid (I have not seen a report of its chromosomes having been counted), '**Claire de Lune**' does well as a pollinator, measured by pods producing numbers of seeds typical for the cultivar. Since this fact became apparent, I have regularly used this pollen for an important share of my early yellows crosses.

"Laning's Double Yellow" comes into flower almost as late as '**Moonrise**' here, just ahead of the officinalis hybrids. LDY makes plenty of pollen, but I've had disconcertingly low production of sound seeds in the few crosses that it has been possible to make on late blossoms of the early flowering kinds. This year I had good seed production by this pollen from some vigorous "outcross" seedlings of '**Moonrise**', although '**Moonrise**' gave poor seeds itself. (In this year's extreme heat '**Moonrise**' suffered severe physiological deterioration -- premature loss of chlorophyll, leaving foliage a yellowish bronze color — which may have led to poor seed maturation). "Outcross" seedlings are from such different appearing mates as '**Legion of Honor**', '**Cardinal's Robe**' and '**Paula Fay**'. Although the latter two are supposedly somewhat related to '**Moonrise**' there is much evidence of hybrid vigor in the progeny which suggests less closeness of relationship than can be called inbreeding.

Due to this seemingly better fit between "Laning's Double Yellow" and more midseason hybrids, I am persuaded to speculate whether its affinities might be somehow better with individuals having some officinalis or peregrina (lobata) in their ancestry.

A new yellow was tested here as pollinator this year. Serial number 960 is a yellow flowered offspring of '**Roselette's Child**' F<sub>2</sub> x '**Cream Delight**' a line bred mating. This cross produced a useful proportion of yellow flowered progeny along with creamy pastel pink, ivories and creamy whites. (RCF<sub>2</sub> x '**Moonrise**' gave no yellows, only creamy whites and pinks). Two of the yellow flowered seedlings, 954 and 960, flower early enough to be broadly useful as pollinators. The former opens its flowers a day before '**Roselette**', the latter three or four days after. Like '**Cream Delight**', their seed production is not abundant, but the seeds are strong and sound viable). The pollens of 954 and 960 have given typical seed production on most pods tried. 954 was tested last year and 960 was used extensively this year. However, germination results will not be complete until next spring for either of them (1979 seeds germinated poorly in the first year, possibly due to having been left dry too long after harvest.)

Some interesting tetraploid, yellow flowered peonies have proven to be excellent seed producers, by serial number 93 (Saunders Quad F<sub>2</sub>), 1334 '**Roy Pehrson's Best Yellow**', 1340 "Laning Single Yellow", 39 (Saunders '**Rushlight**' F<sub>2</sub>) and 114 '**Moonrise**' F<sub>2</sub> are abundant seed setters. 1335

(Pehrson's 'Nancy' x 'Archangel') and 134 "Lanings Peach SD" have shown a medium seed yield, as have the seedlings of 'Roselette's Child' F<sub>2</sub> x 'Cream Delight'. Out-crosses of 'Cream Delight' as with 'Chalice', for example, sometimes give as high proportion of soft seeds as one often sees when crossing hybrid tetraploids on Lacti cultivars.

In addition to the tetraploid seeders mentioned above, I continue to be impressed by the seed setting tendencies of some of the F<sub>1</sub> hybrids. Although these are generally sterile, seeds can be obtained in surprising numbers, if suitable pollen is available. 'Roselette' and 'Rushlight' both make a few seeds in my garden. 'Winged Victory' and 'Rose Noble' of the quads and 'Claire de Lune' will also seed. Remember that among the early hybrids these are closest genetically to the Lacti ancestor, the principle source of genes for doubling. I realize that some of my esteemed peers in peony crossing sometimes disparage the use of F<sub>1</sub> hybrids for seedling production owing to the availability of tetraploid advanced generation hybrids which give relatively high seed production, however, in spite of their general infertility, the F<sub>1</sub> hybrids which occasionally give seeds offer potential for breeding advancements. As my friend, Fred Leimkuhler, is fond of saying, a winner comes from just one seed. Whether that seed was the only one in the pod or one of 20 seeds in the pod does not matter at that point.

I note that the advanced generation tetraploids which I grow tend to be "second early" in flowering season. Those which have a greater amount of doubling tend to be later in the group. Our early hybrids show some risk of drifting to midseason. 'Roselette' and 'Rushlight' and 'Claire de Lune' offer potential for countering this tendency to breed the early hybrids into midseason flowering. I hope that earliness is not being inadvertently overlooked.

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#### SEED DISTRIBUTION

Seeds Available:

- 'Serenade' F<sub>2</sub>
- Quad F<sub>3</sub> x 'Silver Dawn' F<sub>3</sub>
- Quad F<sub>3</sub>
- Quad F<sub>4</sub>
- Tetraploid mixture (from Roy Pehrson's select plants)
- 'Moonrise' F<sub>2</sub>
- 'Moonrise' x 'Archangel'
- Lactiflora mix
- 'Minnie Shaylor' (lactiflora)
- P. suffruticosa (tree peony)

For those of you who don't know what you want and those who don't have a special hybridizing goal in mind, I suggest you settle for the tetraploid mixture. This is from selected tetraploid plants that have the qualities necessary for good hybrid seedlings over a greater range of gene traits and possibilities.

How many seeds to you want (actually need). Also, \$1.00 will be needed to cover mailing costs. Write to me with your request for seeds.

Chris Laning  
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