

REQUIRED READING –

- 1. "The Peonies" by John C. Wister, \$3.50 from American Peony Society.
- 2. The Bulletins of the American Peony Society.

SUGGESTED READING –

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The PAEONIA is authorized by Miss Silvia Saunders.

Our leader and teacher in hybridizing is Roy Pehrson.

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HYBRIDIZING POTENTIAL OF SOME PLANTS — (September, 1975)

Saunders' 3494 is '**Solo Flight**'. I find no other identities in the 204 pages of the "Big Notebook" which covers all those crosses involving albiflora. Is '**Solo Flight**' possibly a Saunders seedling? (Ed. Yes!) It must be remembered that Saunders raised quite a few pure lactis before he started to use other species. Possibly those numbered ones are for the most part not named varieties at all.

In a comment on the '**Kelway's Glorious**' x lobata (Perry) cross we have this: "Thus from 25 crosses on '**Kelway's Glorious**' I have 7 in propagation; 3 of them named. Moral: use only the best for crossing on (but I couldn't have known that in 1928.)" There is no way of knowing in what year this note was inserted.

For several years I have been baffled by the appearance of the lacti-lobatas which I have grown from seed. They do not strongly resemble the Saunders ones in plant habit, nor do they correspond in their range of colors with the range of colors which Saunders described. The difference is so marked that I have become almost convinced that lobata (Perry) was not a lobata at all, but actually another "LITTLE RED" from some unknown garden. There are some other bits of evidence which seem to refute this opinion though. For one thing the varieties '**Flame**' and '**Sunbright**' which derive from lobata '**Sunbeam**' look like they could have come from Saunders. Then too, I think that Sir Frederick Stern may have said that there may be two forms of lobata. Finally, there is the heavy, seed production which Saunders obtained.

I grew quite a few seedlings from pollen sent to me by Silvia from 2 plants in her garden -- 2 different clones? Some also from pollen sent by the late Sam Wissing. I suspect from the description in a letter that this one was crimson. All seedlings obtained were practically identical. All but 3 or 4 were reds of nearly identical shade -- something like the color of '**Red Charm**'. Some violet in the coloring of all. Those 3 or 4 were unattractive pinks. All of these had foliage more dissected than the Saunders varieties, and shorter, finer stems. This was a very noticeable difference.

Seedlings from my own plant of lobata are younger. I have seen very few of them in bloom, as I was out of circulation from April 12 to mid-June this summer. I suspect they are going to look like the others except that there could be a greater proportion of weaklings among them.

Now to the LITTLE REDSs

Pollen of '**Ladybird**' from Silvia used on several lactis. About 100 seedlings. Plants quite large, rather heavy stems and much broader, coarser leaves. A few reds, but mostly pinks of various shades, none good enough to keep. I think I would suggest that you don't use it as there is a better one — '**Good Cheer**'.

'**Little Dorrit**'. Only a very few plants. If any bloomed this year I didn't see them. Seem to be quite dwarfish and slow to develop. Don't think you should bother with this one either.

'**Scarlet Tanager**'. Have only 2 year old plants -- a few.

'**Good Cheer**': I'm sure I agree that this is a fine one for breeding, though I have never seen it. Pollen once sent to me by Silvia. Only 20 plants, from a cross on '**Mikado**'. Plants somewhat variable in height. Leaves rather like the Saunders plants, much alike on all of them. Some may lack something in vigor. The only one of these crosses in which there has been any evidence of doubling — three of them. These have carpels, but no stamens. One or possibly two of these are of exceptionally brilliant

color. The late Mr. Cousins used. this one in his breeding program according to Fr. Fiala. If I had this plant I would forget all about lobata.

LITTLE REDS F2s in mixture. I almost forgot about this. Pollen in mixture from Silvia Saunders. Plants quite variable in type. Foliage often resembling lactiflora, but plants of lower stature. Flowers of very little merit with one lone exception. This seedling from 'Shaylor's Sunburst' was unspectacular except for its most unusual color: a pure clear unfading salmon -- not a salmon-pink. I gave it to Chris and he commented on it in the last newsletter. May be a really worthy peony. Thus, unless something good should develop from those doubles from '**Good Cheer**', this will have been the only selection saved from (possibly) 600 or more hybrids involving lobata and 1/2 lacti bloods.

Now for the Itos. Last year I thought that the abortive petals were caused by the severe spring frost. Not so! This year 13 or 14 plants behaved the same way -- and there was no frost! Surely the cause must be either environmental or genetic — and I favor the latter. Maybe it is significant none of these was a potential yellow.

This outcome was depressing, of course, but there was also one promising development. A plant with only one bloom made three seeds! These looked almost, but not quite, good enough to grow. I'm pretty sure that some other time there will be some good fat seeds. There's no need to tell you what that would mean to us.

If, next summer, I were to send you (Don Hollingsworth) a tiny dab of pollen from my normal flowering plant, could you check it for viability? I may have gotten one or two seeds from it this year -- on lactis.

- Roy Pehrson

Dear Chris,

November 23, 1975

You asked about promising seedlings and I can mention these of the herbaceous hybrids:

'**Miss America**' x '**Good Cheer**' -- multi-petalled single creamy pink like 'Lovely Rose'. Three sister seedlings are also lovely pinks but cooler toned.

'Sword Dance' X '**Good Cheer**' -- the orangest, sharpest red I've seen yet, a single.

'**Karl Rosenfield**' x '**Good Cheer**' -- fine red, multi-petalled semi-double.

'**Dawn Pink**' x 'Echo' -- a lovely, soft pink anemone, extraordinary petal substance reminiscent of 'Echo'.

'**Kickapoo**' x 'Red Red Rose' -- a handsome clear red semi-double.

'**Kickapoo**' and '**Dawn Pink**' have both produced bomb and "two-stage" type doubles. I now regret having culled them from the collection. In fact, I have set about getting them back, also some of the other show winning form singles, such as 'Spellbinder', 'Pico', 'Le Jour', and 'Arcturus', the latter for its reputation of long-lasting cut flowers.

- Don Hollingsworth

These thought provoking statements have been selected from Frank Styer's 1968-69 list of peony varieties offered. (11-14-75 - Don Hollingsworth)

J. FRANKLIN STYER NURSERIES

The BEST of the PEONIES, 1968-1969

This catalog represents a recommendation for your garden by a firm which has been growing peonies 78 years. We are especially able to select these varieties because of our locations, which include widely different soils, exposures, and climates. Any Peonies do well in deep prairie soils, and certain lakeshore spots in the upper Midwest. In the Eastern seaboard, however, it is a different story; there are spells of excessive rainfall, summers are hot and humid, and many winters lack the invigorating cold weather which is favorable. The varieties offered have made good under these conditions.

Jacob Styer helped organize the American Peony Society, and was the first to ship cut peonies into Eastern markets. We have grown and tested varieties from all over the world, on our farms in North Carolina, Virginia, Pennsylvania, and New York. The majority of our list make good cut flowers, a character which you will also prefer, other things being equal. Generally, such varieties open easily and quickly from a tight bud, have good stem length, even color, and long-keeping quality or substance.

As an example of our ruthless weeding out of undesirable kinds, you will find that our cutting fields contain far less of new American varieties than of French and English introductions of the 1800's. We attribute this to the similarity of soils and climates of our area to those of the European horticulturists of those years. We have produced a few of our own kinds, which are listed. We hope they will prove superior for the gardeners of our area, since they have done well several years for us.

A border of a lawn area is a good place for a collection of peonies. The attractive plants can be cultivated for two years, then the grass may grow about them. They will give you cut flowers for weeks and the foliage is always dignified and clean. After blooming, the stems may be clipped under the dead flowers but above the foliage. When cutting peonies in bloom, leave at least two or three leaves on each stem of the plant, to keep it healthy.

Japanese type peonies have an outer circle of wide petals, enclosing a center of narrow petaloids usually contrasting in color. Bomb type peonies have a globe or crown in the center consisting of many petals narrower than the outer circle; these resemble the big ball chrysanthemums. Rose type peonies have nearly all petals just as broad as the outer ones.

Hybrid peonies are, a new group with sharper colors, but are still nearly all single flowered. The roots are constricted at the crown, like sweet potatoes. These may have several or as few as one "eye". They are much earlier in blooming.

Mr. J. Franklin Styer
1258 Birmingham Road
West Chester, Pennsylvania 19380

July 7, 1975

Dear Mr. Styer:

I've just recently gone over some of the things you've written for the American Peony Society Bulletin during the past few years. I am particularly interested by your comments on qualities we should be seeking in peony breeding. Health, vigor and long lasting quality of flower are obvious needs here.

Could you please recommend some varieties of *P. lactiflora* which I should be considering in my breeding efforts? I should add to the above qualities - long petalled - for I am working with the Saunders "Little Reds" group; ('**Good Cheer**', etc.) on lacti and the Lutea Hybrids on lacti Both are weak on size and on height, as well, in most cultivars

Thanks very much.

- Don Hollingsworth

Dear Mr. Hollingsworth,

August 8, 1975

I am not qualified to advise you as a hybridizer. I have not even started, for a very good reason -- three farms of 20 to 30 acres in Virginia, Pennsylvania and New York, where marketing flowers from May 10 to July 1 has been a preoccupation for 50 years. Before that, my father was in the same position.

However, I did save some seed and have grown several thousand seedlings. Knowing that the lactifloras were horticulturally sorted out over centuries mainly for size and doubleness and that this seemed to have led to loss of "substance" and keeping quality, I followed two lines. One was to plant seed of singles which resembled the lacti "type"; from these we got lots of singles and worthless doubles. Second generation were no better. The other was to get seed from our old cut-flower cultivars which had the best qualities we were after. These qualities also included bomb type, free opening buds, and above all, greater vigor in our warm climate.

Most of our good doubles made no seed. But Venus (Kelway) would set some here and there and we had thousands of it. We have selected thirty or forty cultivars of which Venus is the seed parent — the pollen parent was lightning bugs. None of these is really white, nor red, except a group of three large whites we saved one year on account of their substance. Five or six closely resemble Venus. In general these grow well in our climate and open well. Most are bomb type, but some are great big full rose type.

As for cut-flower standards, I would list —

1. Free and quick opening — which means bomb type.
2. Size — in particular, all flowers borne to be a fair size.
3. We call 22" and up — Long stem; 28" and up — Fancy; and cut close to the ground — Extra Fancy. We want 75% to be Extra Fancy. We only cut 1/3 to 1/2 of a plant each year, to save foliage on remaining stems.
4. Solid single color. No collars, stamens, candy stripes, etc.
5. Straight stem. '**Red Charm**' etc. are crooked.
6. Flower must hold its petals. '**Felix Crousse**' and '**M. Jules Elie**' are our standard on this. Wholesale dealers scream if they find any loose petals in a box.
7. Bud, before opening, must show exact color of open flower.

DON FURTHER REPORTS:

In another inquiry, I asked Mr. Styer about his two mutations of 'M. Jules Elie', whether they are identical other than the white and light pink color. (These were mentioned in his 1968-69 catalog and in A. P. S. Bulletin 202, June, 1972, pg. 19). His answer? "My sports of 'M. Jules Elie' are pure white and blush. I named these 'Ann Styer' and 'Linda', as they were found in the field by them. They are identical with 'M. Jules Elie' except in color. But, look out, they are reverting at the rate of about 2% in any row." I wonder if this means that these sports, are chimeras with the mutation being in the tissue from which the flowering structures normally arise, but that adventitious vegetative buds may arise in the crown from non-mutated tissue, eventually giving rise to increase of the plant which then produces flowers of typical 'M. Jules Elie' color. Such an occurrence would lead to clumps producing both kinds of flowers unless the parts producing typical flowers were carefully marked and regularly rogued out. If such a chimera, then for hybridizing it would make no difference that the plant can revert. As long as one uses flowers of the mutated colors, their genes will control the genetic makeup that can be passed on to the seedlings. Consider Roy Pehrson's discussion of 'Moonrise's seedlings and his speculation that in it the genetic ability to reproduce the lobata red of its heritage has been lost during the genetic reshuffle from whence it came (Sept. 1975 Paeonia). Now, consider the significance for producing yellow Itoh hybrids. This line of reasoning supports the speculation that if the pollen of yellow lutea hybrids is used on white or near white Chinese peonies (genes for strong red "dropped out"), the resulting hybrids are most likely to be yellow, rather than reds or blends.

Mr. Styer also wrote, "Among the hybrids, there is much demand for the doubles such as 'Diana Parks', but they apparently can't produce, or reproduce, fast enough. Good pink and white doubles would be interesting as they tend to better color than Albifloras."

-Don Hollingsworth

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MEMO ON TRANSPLANTING PEONIES --

1. Don't transplant whole peony bushes — divide them first into 3 to 5 eye divisions.
2. My experience with this (whole peony bush transplanting) proves it to be entirely unsatisfactory.

Experience #1: Double form of Officinalis with this mistreatment seemed to be in languish for several years — wilting in hot sun — while other plants were enjoying the nice day. Even now it seems to languish.

Experience #2: A row of "All Albiflora - Out" plants had been transplanted without first having been divided. Only now, three years later, are they starting to bloom while their sister seedlings continue to bloom furiously despite the fierce competition they must endure.

- Chris Laning

Lafayette, MN
Nov. 8, 1975

Dear Don:

I like very much your proposal for a breeding program which would start with the crossing of lacti and '**Red Red Rose**', and following this up with a sequence of selfing and then backcrossing. I would surely do it myself except for the time element. If you are very selective in evaluating the seedlings you select for the successive stages, I can envision no possibility of failing to obtain some very interesting final results.

There is a very real possibility that a little start has already been made in one direction, as I will now explain.

It was, I suppose, about nine years ago that I brought some '**Red Red Rose**' pollen to Brand's show garden and used it on some blooms of '**Battle Flag**'. The cross was not protected. Some seeds were made and from these there grew something like 30 plants. If I paid too little attention to these plants it was because, at that time, I had not come to realize that backcrosses of this type make plants which look exactly like true lactifloras. There were not very many reds among these seedlings, but several of these had shades of red which did not appear to fall quite within the range of reds as I remembered seeing them in named lactis. I looked at these repeatedly, but decided finally that these were just some more "accidental lactifloras" like many others I had bloomed. Therefore I did not mark any of these seedlings to be saved.

Later that summer I was to change my opinion about these being pure lactis. One plant made a set of very bright red, well filled seed pods. I felt sure that this could not have been simply a very long-shot happening, because there was yet another with red pods — though not as bright. I have not seen this condition in lactiflora or in anything else. The pods are glabrous.

Chris Laning has been the recipient of several freakish peonies which have appeared from time to time in my plantings. I told him that these seed pods were so bright and attractive that they might perhaps be used effectively as accessory material in flower arrangements. Although by this time I was not unaware of the possibility that the plant might possess some breeding potential, I sent it on to Chris, together with the open pollinated seeds from both red-podded plants. Chris now tells me that the plant bloomed this summer — and had red pods. He did not mention its color, so I still don't know that. Flower, that is! *

Chris told me something else which adds greatly to the excitement of this cross. One of the seedlings, now two years old, has red foliage! Can this really be true? Because of those red-podded plants I believe that, it can. I should like to know what happens to this one next summer though. A couple of times I have found red leaved 2 and 3 year old plants. When I examined the plants closely, I found a "gall" or swelling at the base of the plant which looked like it might have resulted from an insect sting. These plants were green the next year. Let's hope that the plant Chris has is not like these!

* I think the flower was just like the blooms in a row of about 50 lacti x lobata seedlings — a good bright red — and single . Next year I must compare it with '**Red Red Rose**'.- Chris

It does not happen very often, but a very few crosses will produce seedlings which exhibit characteristics which are never seen in either of the parent species. I have never seen a really positive statement to this effect, but the little I have read makes me believe that no gene acts entirely alone in its coding for some specific characteristic. So, in some crosses, it is certain that genes in suitable combinations, some from each species, are able to perform their allotted functions or no hybrid would result. At the same time, some of these might differ in some such way that they might somehow also code for some bizarre side effects.

Some examples:

Saunders used on lactiflora pollens from each member of the closely related group of species -- anomala, emodi, Beresowski, veitchii and Woodwardi. Only anomala produced many hybrid plants, but in every cross all of the seedlings had pronounced multicarpy.

The two "abnormalities" which I have seen in my own Ito seedlings are not as universal as the above, but one of them at least is not less conspicuous. Only one of fourteen of these which have been grown to blooming size produces a complete flower. The others have only abortive petallage; some of these with only tattered wisps of color, and some others with a little more. As none of these shows any yellow in its coloring, I am inclined to believe that they have delavayi in their ancestry, rather than lutea. There is a second unexpected trait which makes some of the plants stand out conspicuously in the garden. About 50% of the plants are extremely susceptible to "leaf spot" fungus. More so than any other peony I know about.

None of these aberrations offer anything of value to the hybridizer. The "red pod" happening may be different. It is a completely new trait also, but may have come about in a different way. I would guess that the five non-essential chromosomes of '**Red Red Rose**' were involved in this. This is not a true "sport" or "mutation" as produced in nature by ionizing radiation, and has to be repeatable. Of course, it is easy to say this since there were two red podded plants.

Chris should self pollinate this plant with good control and hope that it is not completely self incompatible. It probably is not. In fact, it is tempting to suppose that his red leaved plant is a true F2. After a sufficient number of interesting segregates have been obtained in the F2, subsequent breeding should be done following well established rules of genetic inheritance. But look out for the possibility that you will make everything homozygous for the same incompatibility genes. Backcrossing to some lobata other than '**Red Red Rose**' might prevent this and still do nothing to disrupt the trend of results. It should not be done unless it becomes necessary, however.

There is an opportunity here for you and Chris to cooperate.

- Roy Pehrson

ED: Don: What do you want me to do about these plants?

1. Divide and send you a piece of each?
2. Send pollen from "red pods"?
3. Share their next year's seed production?
4. A report on their F2's and "red bush"?

- Chris

SECOND YEAR RESULTS OF HEAVY APPLICATION of COMMERCIAL FERTILIZER IN GROWING PEONIES

Don Hollingsworth

In 1974 I reported in *Paeonia* on plans and later on first year results of applying relatively high rates of commercial fertilizers around peonies. In early spring 12-12-12 and 8-24-8 were applied at rates intended to approximate 400 lbs. per acre, with plan to follow with a like amount later. However, when the first application was complete a computation of area and total amount used showed that the treatment had actually averaged about 900 lbs. per acre. For more complete details see *Paeonia*, March and December, 1974.

First year results were more and finer flowers with especially sharper colors. Numerous seedlings flowered for the first time which I believe now would have flowered younger had I been fertilizing regularly.

Second year applications of fertilizer were a bit more conservative, again applied in the early spring. Used 12-12-12 intending to get not more than 2-lbs. of N (actual) per 1000 square feet of planting area. (The actual treatment was reduced to how much space would be covered with the amount held by a small cat food can,) In additions, I used a couple of foliage treatments as described by David Reath in his article on grafting tree peonies (March 1974 *A.P.S. Bulletin*).

Second year results were much like those of the first year with the addition that seed production was much better than in the previous two years. These satisfying results were obtained during two years of rather severe drouth.

In evaluating the foregoing statements of results, one should keep in mind that, while the fertilization is the most significant variable in my opinion, these were not rigidly controlled experiments, as is necessary if we are to claim that all of the results are attributable to the variable discussed. However, the results do tend to refute claims that the use of commercial fertilizers is harmful, as is frequently reported in cultural recommendations for peonies. They also tend to refute the generalization that fertilizer should be applied only in the fall, although common sense leads us to recognize that fall application will give the material more time to move into the root zone before spring growth. Common sense also leads us to recognize that if treatments are applied annually, the critical timing is no longer so important.

It is my conclusion that the best fertility is high organic matter and a "good" soil in general. However, when the soil available is not sufficient, commercial fertilizers provide a readily available convenient and satisfactory supplement. This is not to propose that these materials will replace the need for organic matter, which does numerous things for the soil as a growing medium, beyond the minerals it supplies as it decays. I continue to seize every opportunity to obtain supplemental sources of organic matter, as my circumstances permit.

If soil analysis and experimentation in a planting demonstrates benefits from the use of commercial fertilizers, then I believe the treatments should be given annually. This approach will promote uniformity of results over the years and reduce the stress on the plants which may accompany sharp variations in the growth environment which would result from the erratic use of highly soluble fertilizer materials. In peonies, the amount of root growth this year is the major factor limiting what the plant can do next year. What the plant is able to do at flowering time depends upon the food that was stored in the roots and the growth and food production during the brief period prior to flowering. Therefore the benefits of a one time treatment may be experienced over a two season period, easily leading one to suppose the effect more permanent.

Double Flowered Forms of PAEONIA LACTIFLORA as Seed Parents
Don Hollingsworth

The large flowered hybrid peonies presently available in the plant trade do not, in most instances, compete with the double flowered *Paeonia lactiflora* cultivars. Owing to the abundance of pollen in most hybrid flowers, they are made less satisfactory for show and florist applications, when it is necessary or desirable that blossom appearance quality hold up through repeated handling and relatively long display periods. Also, the hybrids are sometime less advantageously adapted for nursery propagation. The tasks of the peony hybridists will not be completed as long as these circumstances prevail.

The obvious remedy is to breed for forms having the better qualities of both kinds — the newer colors, extended flowering season and big double flowers. Historically, the few genuine doubles which have appeared among the hybrids are believed to have come from crosses between *P. officinalis rubra plena*, a double red, and lacti forms. However, the originators have by and large left a meager record. Professor A.P. Saunders who kept and published records meticulously has left hybridists a great foundation of information. However, his work primarily involved extensive experimentation with interspecies compatibility and with complex approaches for transferring the genetic capability for synthesizing yellow pigmentation into hybrids involving the traditional garden cultivars. The kinds he introduced into commerce afford a rich gene pool, mostly in the form of single and semidouble, relatively infertile triploid hybrids.

More recent peony hybridizing efforts have taken several directions, but have predominantly focused upon the production of more fertile, advanced generation hybrids at the tetraploid level of chromosome numbers using Prof. Saunders' strains. A large array of advanced generation and inter-strain hybrids has resulted, almost none of which has given double flowers, insofar as reports have been given. The exceptions I find are in a 1971 report by Roy Pehrson that of 700 five-year old seedlings there was a Japanese flowered seedling of '**Archangel**' x '**Nancy**' and a probable Quad F3 having a "loose double" flower containing both, pollen and stigmas which was dubbed, "Super-double:, (possibly in appreciation of the apparent difficulty of the feat.)

Other double hybrid seedlings reported have had a lacti Japanese flowered parent for one and an F1 hybrid involving a lacti or a double *officinalis* as the other parent. Roy's '**Lullaby**', is '**Moon of Nippon**' x '**Laura Magnuson**', and he has reported a double seedling similar to '**Red Charm**' from '**Mikado**' x '**Good Cheer**'. I interpret that neither of these has pollen, an ultimate criterion of doubleness.

While Professor Saunders did not report specific experimentation in breeding for doubleness, he left us at least two references of his thoughts on this. He wrote in "Some Hybrid Peonies" (A.P.S. Bulletin No. 84, Sept. 1941) that he would recommend the use of '**James Kelway**' or '**Lady Alexandra Duff**' to hybridists who might wish to get doubleness into their hybrids. In this connection his '**Audrey**' and '**Celia**', double Macro Hybrids, are out of the former and a semi-double seedling of the latter, Saunders 1875, produced '**Cythrea**' and '**Ludovica**', two of the more multi-petalled of the Saunders Lobata of Perry Hybrids (S.L.P. Hybrids).

Roy Pehrson has now reported a quote from Prof. Saunders in which he commented that '**Kelway's Glorious**', full double lacti, has great potential as a breeder. This is well placed, for he introduced four S.L.P. Hybrids from 25 raised out of this great peony. They are '**Carina**', '**Laura Magnuson**', '**Ellen Cowley**' and '**Sophie**'.

In Peonies (James Boyd, ed., 1928), Prof. Saunders quoted an account by Prof. Robert T. Jackson of the work of John Richardson (1798-1887), in part as follows: ". . . It is an extraordinary thing and a mystery how Mr. Richardson managed to raise so many choice seedling peonies. . . . He had a relatively small bed of seedlings -- "candidates for fame" he jocosely called them. This bed, as I recall it, was not larger than an ordinary room of twelve to eighteen feet square. He had no single peonies and therefore only occasionally got seed as is the custom with double peonies. Five peonies bred by Richardson were rated 8.6 and over in the A.P.S. Symposia reported in this reference. One of them is **'Walter Faxon'**.

Myron Bigger recently recounted one of his experiences of raising seedlings from selected double varieties. He once collected a double handful of seeds from a planting of good kinds. From the resulting seedling he named and introduced **'Carrara'**, **'Kansas'**, **'Pink Wonder'**, **'Plainsman'**, **'Prairie Belle'**, **'Snow Mountain'**, **'Sparkling Star'**, **'Westerner'**, and **'Jayhawker'**. Six of the nine are included in the 1974 American Peony Society list of recommended varieties, which is slightly more than 5% of all the *P. lactiflora* cultivars in that list. The parent cultivars from which these seeds were produced? Mr. Bigger reports they were **'M. Jules Elie'**, **'Primevère'**, **'Reine Hortense'**, **'Karl Rosenfield'**, **'Mary Brand'**, and **'Festiva Maxima'**.

Another bit of relevant history from Mr. Bigger is that Lyman Cousins' great **'Ann Cousins'** was bred from a cross of **'Primevère'** x **'La Lorraine'**.

A couple of years ago I commenced to inquire of veteran growers for the names of double flowered cultivars which they would recommend as sometimes producing seeds and that they believe should be especially useful for further hybridizing. Roy Klehm named **'Charlie's White'** as one which sets seed easily by most pollens he has tried and **'Bowl of Cream'** as a strong pollinator. Mr. Bigger mentioned **'Big Ben'**, **'Carrara'**, **'Jayhawker'**, **'Snow Mountain'**, **'Westerner'**, **'Mme de Verneville'**, **'Charm'**, **'Primevère'**, **'Radiant Red'**, **'Festiva Maxima'**, and **'Marie Crousse'**. Jacob Styer mentioned **'Venus'**, Allen Wild said **'Jan van Leeuwen'**.

A method of increasing the carpels on double peonies is described in *The Peonies* (John Wister, ed. 1962), pg. 126-7. Just after new stems emerge above ground in the spring, cut them off at the ground line. They will then grow secondary stems from the axillary buds which remain below ground. The flowers which form on these stems will be less double and may have better carpels. I have had success with this method on established plants of **'Karl Rosenfield'**, **'Carolina Moon'** and **'Big Ben'**. It did not succeed in another trial on **'Reine Hortense'** nor **'Kelway's Glorious'**. **'Miss America'** produces secondary stems right along with the primaries without pruning. Others no doubt do also.

'Kelway's Glorious', however, frequently produces tiny carpels for me. I commenced in 1973 trying to get seeds on these. The first year four flowers were pollinated and one seed harvested. Interestingly, after I started heavy fertilization of the soil (early spring, 1974), the flowers not only got larger but the carpels improved. In 1974 ten flowers were pollinated and twenty seeds harvested. In 1975 fifteen crosses were made and eleven seeds were harvested. The carpels frequently split under pressure of the developing seeds and many of the seeds so exposed develop poorly. In 1975 most of the seeds harvested came from one carpel that survived intact. Carpels on other doubles also tend to rupture, especially on **'Big Ben'** and **'Miss America'**.

Edward Michau once told me that he sometimes finds carpels on side buds of **'Festiva Maxima'**, whereas on **'Kelway's Glorious'** the carpels have been limited to the primary flower, in my observations. Michau reports his oldest Itoh Hybrid is from such a side bud carpel of **'Festiva Maxima'**.

What hybrid pollens to use on double lactiflora peonies when the opportunity arises? The strongest pollinators that have doubling in their makeup are the Little Reds that are out of double P. officinalis. I have **'Good Cheer'** and will mail pollen on request. Also use the F1 SLP Hybrids, those out of double Lacti. Some are mentioned here and an almost complete list is printed in Paeonia of March, 1973, pp. 7-8. The missing one is **'Tecumseh'** bred by Dr. E.B. White (**'Clair de Lune'**, **'Nancy'**) and is out of **'Marie Crousse'** x Lobata of Perry (ref: Gist List). Other F1 hybrids are also good prospective pollinators for good lacti cultivars to produce doubling and to transfer the good colors to double seedlings.

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Dear Chris:

September 30, 1975

. . . I do have a request for you to transmit to your readers. I have been looking into embryo culture of peony. You were right that the embryo is very small and immature. The seed contains mainly endosperm (food storage material). Anyway, I have extracted 100 or so embryos from herbaceous peony seed from open-pollinated **'Sea Shell'** and **'Miss America'**, from the University of Illinois peony garden. These seem to do well in test tube culture, but I will wait until I have them transplanted and growing before I report on this. I would like to try some tree peony seeds, but the ones in our garden set very few seed. If your readers could contribute some seed for my research, I would greatly appreciate it.

Martin M. Meyer, Jr.

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Dear Chris:

(10-22-75)

I received the tree peony seed and have several embryos in test tube culture already. I started with 100 seeds and was able to extract 90 good embryos from this. A tree peony embryo is as easily extracted as a herbaceous one. None of the seeds I extracted had any root activity. I will probably talk about extracting embryos in a sterile condition for the Bulletin some time next spring.

I have root growth of very small embryos of herbaceous peonies and greening of the cotyledons. I am now working on cold storage treatments to break the dormancy in the young shoot. Are peony seeds epigeous (seed coat and cotyledons pushed up out of the soil). I cannot tell from any of my references. *

Thanks again for the tree peony seeds. I have used about half of them already. I hope to have growing plants this spring if everything goes right. - Martin Meyer, Jr.

* Roy Pehrson made a report which answers this question. Will some of you readers look this up in a back issue of Paeonia and drop me a card stating the issue?

- Chris

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DISTRIBUTION OF ROOTS AND SEEDS

Sixteen Paeonia readers received roots and seeds. Four others received just seeds — this is what they had requested.

Roots were as previously reported with the addition of 5 or 6 roots of Quad from my garden along with 5 or 6 **'Moonrise'** x **'Archangel'** roots. All the others from Roy Pehrson. These were deprived of their labels as reported.

Information has been requested with regards to planting the seeds. For the beginner I would suggest sowing them next June. Mark their location well since some will take two years to germinate. Don't lose heart!! - Chris