

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 –

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

The PAEONIA is authorized by Miss Silvia Saunders.

Our leader and teacher in hybridizing is Roy Pehrson.

Editors are Chris and Lois Laning, 553 West F Avenue, Kalamazoo, Michigan, 49007.

TABLE OF CONTENTS

Seeds for Distribution, Chris Laning ___ pg 1
 Report on the Show, Silvia Saunders ___ pg 2
 1976 APS Convention,
 Don Hollingsworth _____ pg 3
 Speed of Pollen Tube Growth,
 Don Hollingsworth _____ pg 4
 Letter from Prof. Martin Meyer _____ pg 5
 Memo from Chris Laning _____ pg 6
 Saunders Little Reds Hybrids
 Don Hollingsworth _____ pg 7
 Add Color to Suit Your Taste
 Chris Laning _____ pg 9
 * * * * *

Suggested yearly contribution to cover expenses of printing and mailing is \$2.00.

SEEDS FOR DISTRIBUTION:

- | | |
|--|--------------------------------------|
| Quad F2 x Moonrise F2 | Rusty - (open) |
| Quad F3 x Roselette F2 | Vista x Archangel |
| Battleflag x Red Red Rose | Nippon Brilliant x Fireflame |
| Moonrise x Archangel | Mixed - lactiflora (open) from Mchau |
| Roy's Pehrson's Best Yellow | #12128 - (open) |
| Mloko x Mloko & Mloko x Daurica | Roy's Mauve Bomb F2 |
| Miscellaneous Hybrids (Roy Pehrson) | Roselette F2 |
| Pink Hybrid (Roy Pehrson) | Rushlight F2 |
| Nippon Brilliant x Roy's Pehrson's Best Yellow | Roy's Second Best Yellow |
| Carolina Moon x Roy's Pehrson's Best Yellow | |

There are many envelopes with just a few seeds that won't be listed. These came from Silvia Saunders, Ed Michau, Roy Pehrson, and from people I fail to list (maybe).

Tree peony seeds and lutea hybrid seeds are but few, but read what I received from Toichi Domoto (Hayward, California), dated September 14, 1976 - "Seed crop is very poor; just started to collect them. Do not have enough for orders, so what's a pound less. Will send you some when ready."

My plants gave not one tree peony seed, while last year I got 140 seeds from them.
-Chris

Note: Don Hollingsworth is offering a nice selection of plants at reasonable price. Now is the time to take advantage of the opportunity of getting some valuable plants for hybridizing.

REPORT OF THE SHOW

Silvia Saunders

I promised Chris to write a piece for PAEONIA about the Show, and I'll keep that promise. But it isn't the report that you ought to have, or ought to publish. PAEONIA aims to be a scientific publication, and Rave Reviews are out of place. However — to me it was a very beautiful show; almost perfect. First, Minneapolis has always exerted a strong therapeutic effect on me, so that while I'm there, I see everything through rosy glasses: -- the weather is more perfect, the people friendlier, the peonies are more beautiful, better exhibited, their colors more glowing and they are even more fragrant, than I can ever recall. That Ridgedale Center, with the brilliant sunlight pouring in and yet the temperature perfect for humans, I thought a beautiful Show Room. As I asked around afterwards for comments, I got: "Quality of show blooms less good", "Drought hard on the blooms this year", "Number of blooms and exhibitors was off", "In some classes no entries at all", and the like. But to me it was all perfect. This is not proper for PAEONIA. I was thrilled by visiting two days ahead at David Reath's, in northern Michigan, and by walking through miles of his beautifully grown plants and picking blooms to go to the Show. Then when David garnered so many firsts and so many seconds, in classes that are usually conquered by our redoubtable Marvin Karrels, as well as by other long-time winners, why, our cup runneth over.

Seriously, it was most exciting to me to see the hybrids, both herbaceous and tree, and even the mix of the two kinds, the Itoh's, in such large numbers and all so crisp and fresh and brilliant. I heard that the arrangements classes were finer than ever before, and was sorry I never seemed to have time to go down and visit them, for I love those classes.

When I realized that I had not made careful notes on the show, I wrote to several people who were kind enough to send in their own notes, which I have excerpted here.

Muryle Kostiuk wrote that she had been thrilled to be invited to stay at Greta Kessenich's, as I was at David Reath's, and to take part in preparing blooms for the Show. 'The hybrids, and the tree peonies are taking a larger share of the show now, and of the prizes, than they used to do, and that's good for all of us. Great too is the fact that when you visit Greta and she's showing you around, she picks up a hoe and always a weed goes out. The Ridgedale Mall was the best place to hold a show that I've been to. And the peony people are the only ones you could put your purse under the tables and it wasn't bothered. I think that says a lot for our Society. Also, so especially nice to see Roy P. there.

Carroll Spangler wrote, "Peony season is long awaited and then it passes so quickly, but the National Meeting is such a gratifying experience! The show is a fine display window for the exhibitor, with the breeders there too in number. It is they, along with the Creator, who make all this beauty possible. I am most grateful for the wise counsel of men like Marvin Karrels, Roy Pehrson, and Chris Laning. My friend, Roger Anderson, had long talks with the two latter men. Roger's interest is mainly in breeding; he is rapidly on his way to making a good peony man."

Bill Seidl, who excerpts PAEONIA for the Bulletin, wrote a good letter on Professor Meyer's progress report on Tissue Culture. Bill says, "All hybridizers should be hoping for success in this venture as it will greatly increase the demand by the commercial grower for breeders' originations. The demonstration of extracting tiny peony seed embryos and placing on LS media, all under sterile conditions, was fascinating, and interested members took home one or more test tubes of embryos growing in vitro. The extraction technique and aftercare is explained in Bulletin #217, pp. 32-35. It occurred to me that this technique could best be applied to those rare seeds arising from hard-to-make

crosses where less than 100% germination means no seedlings at all." Bill was also especially interested in seeing Roy Pehrson's Peony Patch on Sunday afternoon. Many of the Itoh's would be easier to recognize from their immature early spring foliage than from their fully developed foliage of early June. "I enjoyed too the photos of the Itoh hybrids shown by Roy, the slides shown by John Simkins, and I recall with admiration the ease with which Scott Reath demonstrated to us how to graft t.p. scions onto herbaceous roots."

And finally, Roy Pehrson himself : "This year, more than ever before, my great interest centered in meeting the peony people, particularly the hybridizers. Of even more satisfaction to me was the visit of five of the most enthusiastic hybridizers to my own little planting. Bloom was all finished, so there was nothing very exciting to look at, but they were able to observe the considerable variation in plant habit among my numerous Itoh hybrids. This look-see may be able to be of some help to them in their own efforts with this cross. I hope to see everyone again!"

* * * * *

The 1976 National Peony Convention - Some Impressions

Don Hollingsworth

It should be mentioned at the outset that I don't have a whole lot of experience with these events, this one being my second. Having offered that qualification, I can say without further limitation that everything which happened in connection with the trip was satisfying and stimulating. No small part of this was due to my good fortune in having traveled with Ed Michau, member of the APS directors from Derby, Kansas. (Also, I didn't have flowers there to be defeated in the competition!). Only after we departed Greta Kessenich's on Sunday following the program activities, did I realize with a bit of disappointment that there were some people and some flowers which I meant to see that had been missed, simply because the time was so packed with competing demands for attention (a little like a child in a candy shop?)

As to high points, I am unable to choose between the many visits with people and the propagation methods program (fortunately I didn't have to choose). Scott Reath of that most successful tree peony propagating firm demonstrated their version of the age old method of grafting, while Professor Martin Meyer portrayed the latest developments in embryo culture and tissue culture methods with peonies, using demonstrations and illustrated lecture. Neither grafting nor laboratory methods will ever be quite the mystery again to the 35 or so of us who viewed these presentations. Fortunately for me, I was permitted to act as moderator which means nearly all of my questions got asked!

On the way home we visited Roy Pehrson at his garden and spent a couple of hours reviewing Itoh Hybrids. We were also able to spend some time with Father Joe Syrový at Vining, Iowa, where we saw first hand his layering propagation techniques with Itohs and viewed a horticultural collection that is rich in its variety.

I came away from this experience feeling good about the health and morale of the American Peony Society. Enthusiasm and excitement were displayed by members of all ages.

SPEED OF POLLEN TUBE GROWTH:
A Factor In Controlling Contamination Of Inter-Species Pollinations In Paeonia
by Don Hollingsworth

While reading pollen germination tests representing a varied selection of Paeonia species and hybrids, one may soon become impressed by some rather striking differences in speed of pollen tube growth. My initial efforts to interpret test results had concentrated on the question of whether tubes were developing and the relative proportion of pollen grains producing tubes. However, as I sought to choose among pollen samples showing some, but poor, germination, I soon became conscious of apparent differences in tube development habit among various samples. Particularly, a sample of '**Cardinal's Robe**' (SLP Hybrid F1) having very low incidence of tubes also had very long tubes compared to others in the test batch. Mixed-strain delavayi-lutea species samples in the same group gave poor tubes. Soon, it became apparent that the Little Reds and SLP Hybrids pollen samples tend to give more rapid tube development, in general, under the test conditions.

While it is not known to me whether pollen behaves in the stigmas similarly to how it does under test conditions, the foregoing is consistent with the observed high reliability and ease with which hybrids of those lobata-origin pollinators and Chinese (lactiflora) peonies are made. No elaborate protection is necessary to avoid contamination of the crosses. In my experience with '**Good Cheer**' and LITTLE RED UNIDENTIFIED pollens, apparently all one need do to have virtually 100% hybrid seedlings is to place the chosen pollen liberally on the stigmas before self pollen dehisces (sheds).

On the other hand, when making the Itoh cross (*P. lactiflora* cvs. x Lutea Hybrid cvs.) and taking "middling" precautions to isolate the cross from sources of contamination, I have nearly always had some non hybrid seeds produced. My best season of producing Itoh Hybrids was 1975 and I attribute the success primarily to having fertile Lutea Hybrid pollens available. The results serve to illustrate. Of all Itoh cross seed lots, 327 apparently sound seeds were started into warm incubation. A great many failed before spring, which is at least suggestive of hybrid embryos having insufficient genetic material. There were 181 of the remainder that had progressed to the stage of plumule development and were planted out by late spring. Twenty-seven, or 15%, proved to be hybrid. Taking only those seed lots that yielded hybrid plants, 145 seeds were started, 61 planted and 27 proved to be hybrid, 44% of the plants which materialized.

Roy Pehrson, who has been far more successful in the production of Itoh Hybrids than anyone else reporting, has advocated the careful protection of Itoh crosses for several years. He uses as seed parents cultivars that do not have pollen, then strips and bags the flowers pollinated. Nevertheless, there have appeared among his Itoh hybrids a few non-Itohs showing hybrid foliage but not characteristic of the intended cross. He pointed out one of those when Ed Michau and I visited him following the 1976 Minneapolis show and called it a Lobata Hybrid. Chris Laning observed this in an earlier visit and asked for some comments on how it may have happened. The evidence, as I see it, points to contamination of the pollen sample, or the flower during pollination, by a stray grain of lobata pollen. Pollen test observations suggest that, in general, Lutea Hybrid pollen tubes will be no match for the tubes of at least some lobata pollens in the race to fertilize the ovum. The message is that one must not only have viable pollen but in some crosses must also exclude the competition in order to make the crosses with reliability.

LETTER FROM PROFESSOR MARTIN M. MEYTER - September 7, 1976

Dear Chris and Lois:

I did finally get a catalogue and some information on the commercially available embryo culture medium. The powdered tissue culture medium for embryo cultures that nearly approximates the Linsmaier Skoog medium published in the No. 217 American Peony Society Bulletin can be obtained from the:

Grand Island Biological Company
3175 Staley Road
Grand Island, New York 14072

This is sold under the following designation:

Catalogue No. M14-2118. Murashigo and Skoog salt mix with minimal organics with sucrose with agar (8/grams per liter).

The price is as follows: \$20 minimum order

10	1 liter packages	\$ 18.00
50	1 liter packages	\$ 81.65
100	1 liter packages	\$147.20

They also have this formula in 5, 10, and 50 liter packages at a savings, but probably the 1 liter size is the most convenient to start.

I am ordering some of this media for test purposes and will report on how it performs. I may modify the commercial media by diluting 30% as the agar level may be too high. I will probably also add extra sucrose (table sugar) to bring the level of the media from 30 grams/liter to 40 grams/liter.

The test tubes I used for the demonstration in Minnesota can be obtained from:

Bellao Glass, Inc.
P.O. Box B
Vineland, New Jersey 08360

\$25.00 minimum order

Tubes Catalogue No. 2010-25150
Size 25 mm (1 inch) x 150 mm (6 inches)
144 tubes per case

The white polypropylene tube caps are:

Catalogue 2007-2500-5
500 per carton \$24.15

Caps can also be made with tightly pressed aluminum foil or 1 mil Mylar fastened with a rubber band.

Sorry not to have responded sooner, but I just received the catalogues after being on order all summer. I hope this helps you get started with the fascinating embryo culture. I hope your tubes did not get contaminated like Greta Kessenich's and Jennifer Simkins'. It seems Don Hollingsworth's did not make the trip back to Missouri. The embryos I did for my children did quite well at home until they were left in the sun then placed in cool shade. The embryos survived but the rapid cooling introduced spores into the test tube.

We will look forward to seeing you in Champaign next May. If you have any questions about the above, please feel free to contact me.

Sincerely,

Martin M. Meyer
Associate Professor, Nursery Management
104 Ornamental Horticulture Building
University of Illinois at Urbana-Champaign
Urbana, Illinois 61801

* * * * *

Dear Readers:

Roy Pehrson's gardens stand ready to instruct any hybridizer who is willing to take time to investigate the results of a program of intensive effort in developing the Itoh hybrids. With Roy walking down the rows with you, instructing you and describing individual plants, you get the impression that this particular cross is not too difficult. Don't you believe it!

If records were kept on the time spent in developing these plants -- and there are nearly 150 of them — I suppose 100 hours per plant would be a conservative estimate of the time involved. Dedication to the task is mighty important but who has sufficient patience to await results! Does it take ten years from germination 'til bloom and longer than that to get representative blooms? Well, friends, in any case it must be worth the effort because I know a lot of people who are working on it — and are happy!

Roy's Itohs are much taller than the Smirnow introductions and will show a great range of colors since many different pollens were used. Japanese tree peonies, *P. lutea*, lutea hybrids, delavayi hybrids, potanini, and ludlowi are the main pollens tried. Naturally a diverse group of plants could be expected and the foliage (phenotype) shows this to be true.

Already, even before Roy's Itohs bloom, I am wondering what seed production will develop. Until the day that we get good pollen, or a few seeds, the goal for the hybridizer will not be arrived at. Some pollen seems to have developed, though, on Roy's red Itoh. And we may expect great things from at least a few of the plants he has.

Roy himself doesn't seem to be in shape to continue actively his mass hybridizing project. He is now 71 years old, and while this is not a great age, his health remains a problem. If wishes could be of any help, I'm sure we all would wish health and happiness for years to come for our great friend and teacher!

SAUNDERS LITTLE REDS HYBRIDS:
PROMISING POLLINATORS

Don Hollingsworth

The hybridist is indeed fortunate who finds a parent plant of a particular mating that produces fine progeny in an unusually high percentage of the tries made. Old time cattle breeders referred to such a fortunate combination as a "nick" and each dreamed of finding a sire that would nick with all his cowherd, thus maximizing the prospect for reward. Professor A.P. Saunders found such a nick when he used the plant received as lobata from Amos Perry of England. Used with the Chinese peony garden varieties the Saunders Lobata of Perry (SLP) Hybrids were produced, including some of the finest garden hybrids in commerce today. When the Perry lobata was used with the forms of officinalis peony, the Little Reds Hybrids were produced. Not so spectacular as garden subjects, these offer the color potential of their famous parent and are proving to be equally fertile on the Chinese peonies. Roy Pehrson reported on his experiences in using pollen of various Little Reds (this newsletter, Dec. 1975) and I have several times commented favorably on my own use of '**Good Cheer**'. In Father Fiala's article on the Lyman Cousins Inner Glow Hybrids (APS Bulletin 1969 Mar-Apr. 1970) those are attributed partly to Saunders Little Red Hybrids.

Some of the Saunders record on the production of the Little Reds is available by way of a copy of one of Saunders' summary notebooks, which Roy Pehrson has had for several years. The following reproduces with only minimal editing the entries that pertain to the Little Reds Hybrids. The serial numbers are Saunders' plant identifications and each entry probably represents the plants grown from a particular seed lot.

8941 - 8945 Five of ETOLLE DE PLUTON x lobata Perry.

8945..... 1934: June 1, fine carmine pink, no pollen.

8958 - 8965 Eight of Officinalis rosea plena x lobata Perry.

9002..... 1938: Divided; curious opaque salmon. '**Little Dorrit**'

9003..... 1938: Finest lobata color; lovely cup; several days before lobata; divided. '**Ladybird**'

9004..... 1939: Near best lobata color; fuller, larger and earlier.

9064 - 9076 Thirteen Officinalis rubra plena x lobata Perry.

9069..... 1938 Magnificent; tall; lobata color; divided. '**Scarlet Tanager**'

11612-11614 Three Officinalis alba plena x lobata Perry.

11612..... 1938: Lovely, light-lobata color; divided. '**Good Cheer**'

F2 officinalis x lobata

9002 (LITTLE DORRIT)

1939: 13 seeds

1940: 8 seeds

1943 10 seeds

1944 moved 6 seedlings

9003 (LADYBIRD)
1939: 50 seeds
1940: 18 seeds
1943: 20 (?) seedlings
1944: moved 9 seedlings

9060 (SCARLET TANAGER) 1933: 9 seeds, (4 plants)
1939: 40 seeds
1940: 17 seeds
1943: 17 seedlings
1944: moved 12 seedlings

The foregoing notes as originally entered include items having the year 1940 and earlier. Information for later years was entered with a different writing pen in margins.

Little Reds Hybrids apparently received fairly wide distribution through Silvia Saunders' special hybridists list during the final years of the Saunders Nursery operation. Some of them are now being distributed by David Reath, the Goldsmith Nursery and Louis Smirnow. Perhaps there are other sources such as hybridists from whom some may become available from time to time.

Perhaps the key information in selecting Little Reds for crossing has to do with their color pigment inheritance. Named clones are available from three different officinalis parents. Rosea plena contributes genes for color which are expressed in a rather lavender pink as it grows for me. It also contributes the flared color pattern as expressed in its hybrid '**Little Dorrit**' and representatives of the Quads Hybrids, which are sired by a rosea plena hybrid.

Officinalis rubra plena on the other hand, contributes a rich red color inheritance that has given hybrid offspring of fine crimson colors from the Chinese peonies.

Officinalis alba plena contributes the genes for no pigmentation (which in this species may be recessive). The color expressed in '**Good Cheer**' is then possibly due to the color inheritance of the Perry lobata, alone. Throughout, the group represents high pollen fertility and a potential for doubling in the Japanese-anemone-bomb flower type (overall transformation of stamens). At Minneapolis this year Roy Pehrson showed us photographs of some near bomb type flowers on seedlings of '**Mikado**' x '**Good Cheer**'.

How to develop the breeding potentials of the Little Reds is a problem for each breeder, but no doubt will involve thoughtful selection of Chinese (lactiflora) peony parents and interbreeding of the progeny in an attempt to bring out the advantageous re segregations of the chromosomes.

ADD COLOR TO SUIT YOUR TASTE

It can very well be that the main article in this past issue of PAEONIA (June 9 1976), "The Control of Variations in Garden Plants", is too involved to be of interest to you readers! But, will you read it over two or three times -- and maybe study it -- because I'm setting my goals on the basis of this logic. Let me explain:

1. In my seedling garden are several dozen plants of Quad F3's and F4's. I suppose all of them are tetraploid, relatively short, with large leaves (macrophylla influence) and all the flowers of those plants which have bloomed are off-white, cream, or pale yellow. Also, they come into bloom early (May 15th to June 1st). They are fertile both ways and their seeds germinate easily.
2. My best plant to date is a Quad F3 x '**Moonrise**' F2 -- very similar to '**Roy Pehrson's Best Yellow**' in parentage. From a batch of seeds from Roy about 35 or 40 plants developed. Not all have bloomed, but my darling bloomed for the first time this spring. It is almost full double but with pollen and seed pods. Probably it is as yellow as '**Roy Pehrson's Best Yellow**', on a good plant with dark green leaves.
3. From seeds produced by '**Nosegay**', (a mlokozewitschii x tenuifolia F2) are coming flowers of pale yellow and the plant form identical to mloko. These plants as of now don't look too robust.

In all the above groups of plants I feel the pale yellow, cream, and the off-white flowers are the result of color drop out, and not caused by mloko influence. Why should we expect mloko to have such dominance over all else?

So now I feel that color can be added and results tabulated. '**Paula Fay**' and '**Blaze**' will be forced into early bloom -- their pollen will afford the color to be added with probably very interesting results. Also, what might the '**Lavender**'s add, and '**Sable**', and '**Eclipse**' in the quest for new colors.

You too can get into the act just by asking for seeds. There must be a pint of seeds from the various above crosses, open pollinated, but all of them bloomed too early to have been contaminated by lactiflora pollen.

p.s. Don't think that the regular lactiflora whites are in the same class as these hybrids. Albinism producing the whites may be an entirely different story, but surely worth investigating.

- Chris