

THE PEONY NEWSLETTER

For Beginning Hybridists
And Advancing Hybridists

VOLUME 2, No. 1

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REQUIRED READING

THE PEONIES: Ed. by J. Wister
available from the American
Peony Society. Price \$ 3.50.
This book is a must for every
hybridizerour Bible

The Bulletins of the American
Peony Society. 107 1/2 W. Main
Street, Van Wert, Ohio, 45891
many articles for all and an
enrichment of thought.

The Peony,...Ed. by J.Boyd
available only at libraries
but still worthwhile reading.

SRB, OWEN, AND EDGAR
Advanced reading on genetics

THE PEONY NEWSLETTER is under
the auspices of the Peony
Society with President
Silvia Saunders and as a
Reference Person: Roy Pehrson
Who will help guide the
hybridist. Send all material
and questions to Roy Pehrson
Lafayette, Minnesota, 56054
Send all contributions to
Secretaries: Mr. & Mrs. Don Kozak
7915 Branch rd., Medina, Ohio
44256, Suggested contribution
is \$2.00 to cover expenses of
mailing and printing.

We will try to divide the
Newsletter into items of
concern to the hybridists;
beginners, more advanced
members and some general infor-
mation on improving the peony
through hybridizing. We ask
you to read and reread The
Peonies, by Wister.

T A B L E O F C O N T E N T S

The Ito Cross ...Roy Pehrson
Tetraploids.....Roy Pehrson
Seedling 1970....Roy Pehrson
Prof. A.P. Saunders.Roy Pehrson
Letters of Interest.Roy Pehrson
P.Californica..Page 5 & 6
..Rev. John L. Fiala
Tetraploids by mutation
...Don & Lois Kozak

TO OUR READERS: . .

Please feel free to write us
about your work or observations
concerning the peony. If you
have any questions or would
like a question answered let us
know.

Do to unforeseen circumstances
it has become impossible for us
to continue as secretaries of the
newsletter. We are turning the
newsletter over to the new
secretary until we are able to
resume its publication again.

We would like to thank you for
your support and hope you will
continue your letters of encour-
agement.

We hope you all have a good
year ahead. If your peonies
are not covered with a
blanket of snow, be sure they
are protected from the freezing
weather with a good mulch.
Protect young plants the most,
as they are more apt to freeze.

THE "ITO" CROSS

How difficult is the "Ito" cross? American dealers in tree peonies have never been able to depend on some Japanese suppliers sending them young plants which are true to name. Hybridizers, in general, may wonder whether the story as given to Mr. Smirnow may have contained exaggerations or distortions of some sort.

This summer, for the first time, I found some baby seedlings in my lacti X lutea hybrid groups which are unmistakably genuine hybrids. They are mostly a much paler shade of green, are not at all glossy, and have a pattern of dissection and lobing very much like that of tree peony seedlings. In a few, these contrasts are less distinct and some of these may be doubtful.

I made color pictures of some of these groups, which also contained seedlings from a contaminated cross. The contrast shows very plainly. I sent prints to several hybridizers, asking them how many seedlings they have resembling mine, and the amount of crosses they made to obtain them. Here is what I have learned up to now.

Mr. Ito: Made 1200 crosses, obtained 9 true hybrid seedlings.

Myself: Made 582 crosses, obtained 13 to 18 true hybrids.

Five of these are questionable.

Mr. Cooper: Made 150 to 200 crosses, obtained 1 true seedling.

Mr. Reath: Made 100 crosses, no true seedling.

On the basis of this comparison, I would assume that one true seedling would result from each 100 crosses.

Maybe, my own results are overstated. I probably should not count plants until they have survived into a second year. I suspect that in the mixture of pollens I used, there was probably one which was especially effective. The pollens were obtained at the Kingwood Center show. All the pollen was put into one container. I do, however, have several seedlings from Thunderbolt and from Corsair.

I managed to make far fewer crosses this past season. I may have a few seeds from Amber Moon and Age of Gold. I will have to wait to see if they germinate.

One fact is certain, I feel there is no special magic in the make up of Alice Harding to make this kind of cross possible. Possibly any of these hybrids can be used, providing pollen can be found in them. Mr. Cooper has made pollen viability tests of several and apparently finds them to be about 5% viable.

Whether or not such odds as these appeal to you, will depend on your own circumstances. I do believe it is by far the most interesting cross to try if one has the lactifloras to use. Since only nine seedlings of this cross are known to the public, the standard of excellence has not yet been raised very high. Any hybridizer should expect to find among his seedlings a high proportion of "good" ones.

Mr. Ito convincingly disproved the long held opinion that tree peonies cannot be crossed with the herbaceous ones. It is difficult but, not impossible. The Ito hybrids, themselves, should be backcrossed on lactiflora. It is quite likely, they will work. The F2 and back crosses among the lutea and delavayi hybrids are likely to work better than the F1 plants do. Finally, I believe, all the tree species themselves should be used.

TETRAPLOIDS

Almost invariably those who write to me, say they intend to concentrate on tetraploids. One great disadvantage, in this, is the fact that recessives are vastly harder to retrieve from tetraploids than from diploids. The diploids, however, are more difficult to cross. I will go into this at greater depth at a later date.

SEEDLING 1970

This past season I found only one seedling which held much fascination for me. It was in a group of four plants of Archangel X Moonrise. The other three did not bloom. It was a single nine petal bloom with some yellow in it. Those who might like to see it can write to me for a picture.

Hybrids which cannot be faulted on some character are going to be very rare. The form and the substance of the two blooms were as perfect as one could wish. The color was pleasing to me as it was somewhat novel. The foliage though was questionable, although it is a tetraploid, the leaves were thin and they become shabby much too early. I shall have to give it a good close look next summer.

PROFESSOR A.P. SAUNDERS

Professor Saunderson's notebooks contain a few comments which may not yet have been published. I will include one of these from time to time. Here is the first one.

"Albiflora X Officinalis: The whole picture is too long to give, and my early records too incomplete. I have taken enough notes to give a fair picture- using several of the different forms of Officinalis---not Lobata which is an other story."

Professor Saunders made 106 crosses obtained 359 seeds averaging 3 seeds per cross of the above.

Professor Saunders crossed Officinalis X Albiflora. He made 43 crosses obtained 197 seeds averaging 4 seeds per cross. There is a further breakdown in his summary but this much gives a very good picture of how well seeds are made. It is fair to assume that those other hybridizers who have introduced hybrids from this cross had similar experiences.

I have never been tempted to make any of these hybrid, as there are so many in the trade already.

LETTERS OF INTEREST

Louis Smirnow writes to say that he is now hybridizing. A Dr. Raymond Scheele is working with him. He mentions having obtained seeds from a cross between Yellow Heaven (Ito) and tree peony Spring Carnival. The direction of the cross was not given, but I suppose the tree peony was the seed parent.

He also mentions having foolishly sold out on the species Daurica, Obovata, Pubens, Willmottiae, Coriacaes, Macrophylla, Emodi, Humulis, Russi-reverchoni, and woodwardii. He can't find them again even in Europe. It is depressing to know the peony is coming on such bad times.

He even lost Oriental Gold in the winter of 1969. This was his own introduction. He would like information as to where any of these might be obtained. Dr. Scheele would like to get Anthem, Ballerina, Eclipse, Good Cheer, Moonrise F2, and Nova for hybridizing. I was able to chop out a piece of Eclipse for him, but he hasn't been able to locate the others.

THE PEONY CALIFORNICA

Chris Laning is baffled by the behavior of his plant of P. Californica. Here is his account.

"The californica plant is a strange one! It came up in February, grew many stems to the height of about four inches, and then did nothing more. It can take the cold weather but does not prosper. In July the tops disappeared. To thoroughly confuse me, it started growing again in the latter part of September. Do you think I should dig it up and grow it indoors? Also, along with the root, Miss Saunders sent nine seeds of Californica. These were planted in a pot and three came up. Exactly the same thing happened to them! They died down in July, and are now growing again indoors. Do you suppose they are winter bloomers in the land from where they came California,?"

This mid-summer dormancy and autumn regrowth sounds something like the habit of the Oriental poppy and the Madonna Lily. Do you suppose this plant is so specialized in adaptation to a mediterranean type of climate that it just can't be grown successfully east of the coastal range.

P. CALIFORNICA --received roots from Miss Silvia Saunders and some seed, about 3 years ago. Very early, pale bluish-green very incised leaves- very low plant not more 4 to 6 inches. No bloom - leaves remain green in April, May and begin to dry up in June - are completely gone by July and plant disappears. Seems to be a very weak and delicate grower for me. If the fall is warm and moist it reappears again and grows until frost. Seedlings have same constitution and I do not believe they will long survive.

In 1942 to 1949 Brown made a study of the various colonies of *p. californica* in its native habitat in the mountains of California and found at least 10 to 15 separate "colonies" of the species. When the chromosomes of these various colonies were counted they were found to have varying chromosome counts for the separate colonies all the way from 5 (diploid count) to 6,7,8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20. This extensive study is most interesting as it shows that the chromosome count differed and increased as the colonies of *p. californica* spread from the supposedly original diploid center of origin. It is genetically most interesting as it shows irregularities in chromosome counts by chromosome fractures in the centromere, with both losses and additions of individual chromosomes. (This same thing genetically is evidenced in *p. lutea* hybrid "Alice Harding" and other similar hybrids. See the article in the Peony Bulletin on *P. lutea* Hybrid "Alice Harding" -1969. It is interesting that the conclusions in this article scientifically correspond to the extensive work of Brown and his conclusions. That we should expect many other irregularities of chromosome counts in other hybrids and even in isolated species should be the expected norm and not the exception. (Brown's work is highly technical but most interesting to the scientific geneticist).

The chromosome count of *P. californica* that was sent out by Miss Saunders to my knowledge has not been counted and could be anyone of the many variants. It may well be that *p. californica* with different counts has somewhat different habits of growth and accommodation to slightly differing climatic conditions.

It would be most interesting if several forms of the species from various parts of the State of California and the West Coast could be collected before it becomes extinct, as it is most certainly on its way to extinction without ever being properly tried and hybridized. Some concerted effort should be made to obtain many of these plants to be tried in several climates. The leaf habit and fleeting nature of *p. californica* is interesting but unless it can be made to bloom and worked with, it will be a total loss very soon.

(Rev. John L. Fiala)

I would be interested in corresponding with any West Coast hybridists who would have *p. californica* available.

TETRAPLOIDS BY MUTATION

A mutation is usually the result of a change in gene structure or chromosome sets in a cell. It is not the result of a new gene combination. There are two kinds of mutations. One is caused by x-rays or cosmic rays, chemicals or temperature changes. This causes a change in gene structure.

The other is caused by chemicals and temperature change resulting in changes in the number of sets of chromosomes in the cells. It inhibits the normal development of cell division and this results in the number of chromosomes increasing in a cell.

The usual chemicals used are naphthaleneacetamide and chloroform. The naphthaleneacetamide can be purchased from the Chemical division of the Eastman Kodak Company. A few crystals are put in a bag and tied around a plant stem or leaf. The sunlight and moisture of the leaf will cause it to vaporize and be taken into the plant.

Chloroform is used in somewhat the same manner on the buds.

We will discuss radiation to produce mutations. Ideally, a large x-ray machine is the best as you can radiate seed(sprouted) and seedlings. This will give you results sooner than pollen radiation. The dosage should be between 3000 to 8000 Roentgens. Radiate the seeds or seedlings for a minute or less. With experience, you will be able to tell which is the best.

If one has access to a machine or knows a technician this is feasible. However, since most of us don't have an x-ray room in the house, the next best thing is to purchase a short wave lamp.

We first learned about this from Mr. Sam Wissing, a dedicated peony hybridist. He had a display at the Peony Convention in Milwaukee, Wisconsin. He had been using a short wave lamp for a number of years. He would spread the pollen thin as only the surface was radiated. The short wave lamp does not emit deep penetrating rays.

We radiated pollen for 4,5,6, 8,10, and 11 minutes. The Seed: production was the best at the shorter exposure time. This also produced results in mutations.

Since it is a slow process, we will have to wait to see them bloom. Sam Wissing mentioned he had three color breaks in 1969. He also noted foliage changes in seedlings that had not bloomed. In 1970 he hoped to bloom 10 more treated. Here is an excerpt from his letter: "This year 3 plants of 21 all of the same breeding, bloomed all treated with the short wave. All three were color breaks from this type breeding. One was orange, one cream yellow, one brick red. Next year (1970) at least 10 more will bloom and I am looking for and to seeing this, as the foliage has indications that something has taken place, it is crinkled moderately, some extensively, some normal color, some very deep blue green. This same cross of the same two parents, without any radiation of the pollen, produced a set of seedlings, all very ordinary, blushes, and whites, pinks, the same old thing which we already have in abundance."

Unfortunately, ill health prevented further correspondence. The peony lost a devoted hybridist with the passing of Sam Wissing.

We obtained our lamp for radiation of pollen from E.H. Sargent Welch Scientific Co., 9520 Midwest Ave, Garfield Heights, Ohio, 44125. Be sure to specify that you want a lamp with an emission of less than 3100 angstrom units. They have a wide selection of ultra violet lamps. A long wave ultra violet lamp will also work. Do take precautions when radiating pollen. Protect your eyes as well as the rest of you. Happy radiating!