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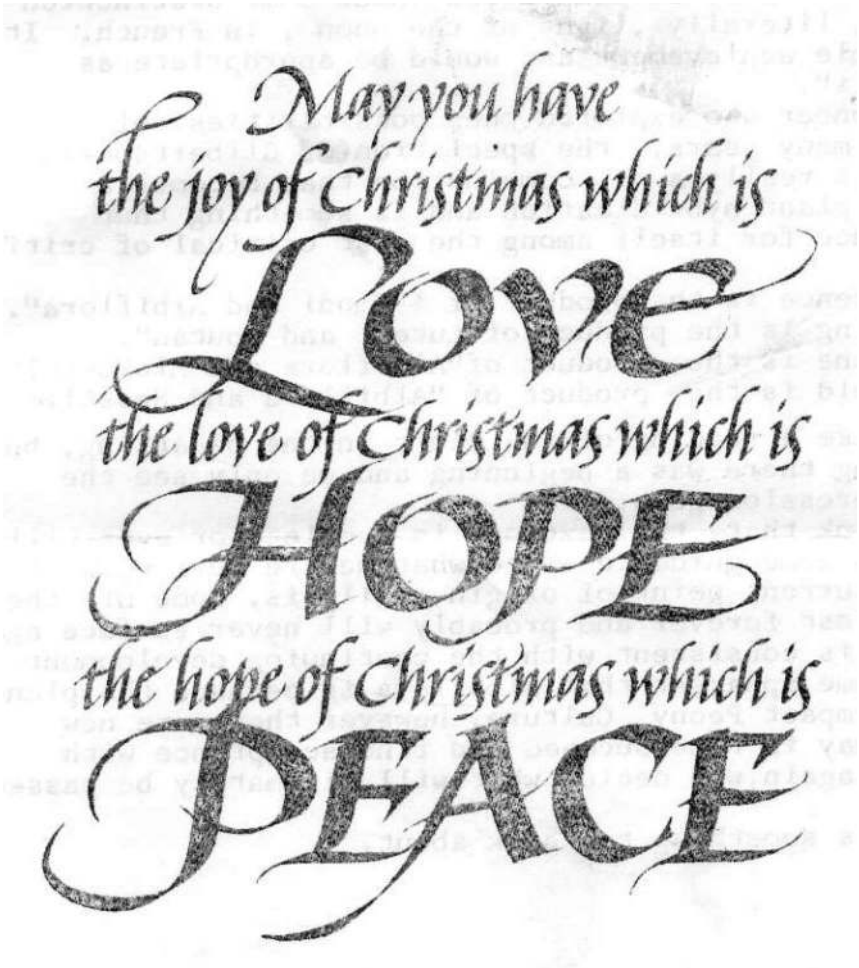

SOME THOUGHTS ON PEONY TAXONOMY CLASSIFICATIONS

Nancy Halas

A species is defined as a fundamental category of taxonomic classification, ranking after a genus and consisting of organisms capable of reproduction.

With this definition fresh in mind, it seems to be an excellent time to honor those individuals who have made in most cases lifetime contributions to the Genus Peony.

I could think of one peony that I have always regarded as a tree peony rather than a herbaceous peony, and that is '**White Innocence**'. I have lost peony plants planted too close to this tree of a peony. It sets about one seed every year and it is fertile. In terms of speciation it would be appropriate to consider this a tree peony and name it "Sandersii."

To be consistent, there is another tree peony that is in fact more herbaceous than tree and that is '**Alice Harding**'. There was one individual who probably has done more than anybody to develop the possibilities of this plant in succeeding generations and that would be appropriate to name it as a herbaceous species and call it "Smirnowii". By the way it appears to be a tetraploid.

Nothing would really be complete without some distinction to '**Claire de Lune**'. It was a rather notable achievement and would be appropriate as a species "Whiteyii."

To that pioneer who explored the possibilities of '**Oriental Gold**' for many years, the speciation of Gllbertsonii.

A species is really a new, combination that becomes a useful standard in plant hybridization and is something that has gained acceptance for itself among the most critical of critics, the gardener.

'**White Innocence**' is the product of Emodi and Albiflora.
'**Alice Harding**' is the product of Lutea and Moutan.
'**Claire de Lune**' is the product of Albiflora and Mlokosewitschii.
'**Oriental Gold**' is the product of Albiflora and Sessiliflora.

This seems like a reading of the bible in the begatting, but like with everything there was a beginning and we only see the currency as the expression goes.

I don't think that the taxonomy is complete or ever will be, but it gives us some guidance as to what we are working with and just what the current point of origin really is. Some of the older species are lost forever and probably will never surface again anywhere, but that is consistent with the continuing development of things. It becomes apparent that Albiflora is perhaps the plant with the greatest impact Peony Culture, however there are new combinations that may in time succeed and find acceptance with critical gardeners again, who decide what will ultimately be passed on.

Certainly, it’s something to think about.

Vulcan, Michigan 49892
Sept. 16, 1986

Dear Friends,

It's time I got this robin back in the mail. It's such a busy time that I haven't had time to write sooner.

The seed crop is ripening with most of the earlier varieties already mature and harvested. The lactifloras are just starting to ripen.

Of the new seedlings that bloomed for the first time, I think the best were out of '**Mother's Choice**' as the pollen parent. There are several different lactifloras used as the pod parent. '**Charlie's White**' produced some interesting seedlings with '**Mother's Choice**'. One is a very full double pure white with the blooms held perfectly erect similar in plant habit to the variety '**Wilford Johnson**'. It grows about 28" tall so should be useful for landscaping. There are several other seedlings numbered from this cross including, semidoubles, Japs, singles and several full doubles. Many have good carpels. The above double doesn't have any carpels.

I noted with interest when digging lactifloras for understocks in grafting that one clump of '**Moonstone**' had well developed seedpods. I kept this clump and lined it out to see if it continues to produced good carpels. In the past I've searched many blooms of '**Moonstone**' in an attempt to locate flowers with functional carpels. It isn't too difficult to find a few blooms with complete carpels and they have proven to be fertile in the past. Often the carpels are not complete at their bases and the developing seedpods are often split open at the base. The above mentioned plant of '**Moonstone**' seemed to have well developed seedpods but since most lacked seeds (only a couple contained a seed or two), I assumed that lack of fertilization was the cause. When these divisions mature they may or may not maintain the carpel development noted this fall.

This past June I tried making a few crosses with pollen of '**Queen Rose**' (an F_1 lobata hybrid similar to '**Cytherea**'). '**Lemon Chiffon**' ('**Salmon Dream**' x 'Reath F-3) produced full pods to the pollen of '**Queen Rose**'. More than one pollination resulted in full pods of seeds. These were protected crosses. This surprised me, as at the time of making the crosses my hopes were for, at best, an occasional seed just as the original cross of '**Paula Fay**' x '**Moonrise**' produced. I would expect '**Cytherea**', '**Ludovica**', '**Lovely Rose**' and other lobata F_1's to perform in a like manner.

Will end this letter here to get the robin back on schedule.

Sincerely,

David Reath

November 28, 1986
For Paeonia

SPECIES GROWERS!

Help . . . Help . . . Help!

With a boost of critical proportions from a couple of Overseas members of the American Peony Society, the winds have turned very much in favor of undertaking some special effort to encourage the growing of Paeonia species in North America. Leo Fernig of France, and Trevor Nottle, have promoted the idea at a time when I have accumulated evidence of a considerable interest in species by members of the Society. The fact is, Leo said he will coordinate communications for this project for the rest of the World, if we'll do it for North America.

Since it is our impression that the species are far more widely grown by gardeners in the Old World than here, for example, the fact of a coordinated activity may be of necessary benefit to the success of any efforts undertaken here. We need to know something of the climate conditions in which particular species are found to thrive, for one thing. For another, it is much more encouraging to undertake an effort when there is somebody willing to cooperate who has at least some direct access to interested persons who may have seed producing plants or can help direct us to sources.

While there has been no official planning or adoption by our Board of Directors, I want to suggest some useful goals of such a project, which might be considered for adoption at an appropriate time.

1. To assemble information from grower experiences which may be of assistance to others who may be inclined to get into this project.

2. To establish plantings of reliably identified species as a source of plant materials for breeding and study. These may be in either private and/or public gardens.

3. To establish a wider acquaintance with the species of Paeonia among gardeners of North America and encourage their individual and collective interests in the satisfactions of growing the rare and unusual, while assuring that a stock of the species survives where ever the plants can be found adapted to grow.

Having talked to and written a few of our colleagues concerning this idea, I want to share one of the responses, in part. I am sure many additional readers of Paeonia will be able to help shed some light on what will encourage specific kinds to thrive, in spite of the harsh climates we have for peonies in North America.

Ed Halas is not new to readers of this letter. I knew him to have worked with *Paeonia wittmanniana* and *P. californica*. He has some enlightening things to say, among which is reflected his appreciation for differences in growing site needs. This is the sort of thing we need to hear from anyone who can contribute. Not everyone will be able to corroborate from their own observations what another is reporting. That isn't necessary. In fact, it is the way we eventually home in on just what are the critical factors, if there are any. (And, I believe there are; as species for the most part are not easy to come by, which would not be the case if they were as easy to grow as the garden varieties.)

Getting to the quotes from Ed's letters "Regarding your item on Species Coordination. I am quite a bit ahead of you." (He chides me a little!) "For two years I searched for a source for Peony Brownii. I found a source in Idaho, a young lady actually, who found seeds in the wild and has already planted them. In Idaho it is regarded as some kind, of weed and really has nobody interested in it.

"Peony Brownii is the equivalent of Peony Officinalis and if you could grow Officinalis, you can surely grow Brownii. . . You would be surprised on how many people cannot grow Officinalis successfully." (It hasn't persisted for me.)

". . . Peony Albiflora (lactiflora) is so easy to grow that a successful grower of them can adapt to anything else, because he says a peony is a peony, right? Wrong, Peony Albiflora is more of a potato (in growing ability) than anything else and all you have to do with a potato is to throw it in a hole and not even cover it and it will do very well. . .

"Peony Officinalis needs to grow in a grassy location, extremely dry in the spring. . . Actually you should see some of the single Officinalis flowers, they can be extremely ugly. But that is the point. Some of the Brownii will be prettier if you feed them and give them a better environment. If we had ever spent any time with Brownii, they would have been garden plants by now. . . .

"We have at least one genuine plant of Peony Wittmanniana and perhaps more. However, the plants are all different from each other in leaf size and flower colour. . . The flowers are all pastel colours and vary in shade from light yellow to peach, to light pink, to light purple and even some whites. Right now Peony Wittmanniana seeds are very hard to come by because people are still planting them to look for a plant worth cloning. Species are really like hybrids in that much effort is spent looking for that one departure from the scrubby run-of-the-mill to one that is a star in its own right. Right now the Wittmanniana series is exciting because we think we have not found the best one yet and the variations are still enticing."

Isn't the above account of working with Wittmanniana a stimulating story! That is exactly the motivation and the satisfaction we find in breeding with the hybrid peonies, etc., etc.

We need to hear from persons who can shed some light on how to handle the more challenging needs of the species. Help! - Don Hollingsworth

MISCELLANEOUS TOPICS . . . . . Bill Seidl

PIGMENT IN TREE PEONY FLOWERS. Concerning pelargonidin, in Bulletin #259 (Sept. 1986), pg. 38, are Dr. Hosoki's tables which show that three suffruticosa cultivars have "much" (+ + +) pelargonidin * : Togawakan, Taiyo, and Kaoh (Kao). Taiyo is often listed in T.P. nursery lists; Kao appears in the Smirnow catalog ("brilliant red semi-double") but not Togawakan. Of the American tree hybrids that he had available to analyze, only '**Thunderbolt**' had any pelargonidin, and that in a slight (+) amount. '**Thunderbolt**''s seedling, '**Hephestos**' (D240), understandably then, has a minor amount (Cooper's article, p 143 in "APS Best of 75 Years" book; Bulletin #197, 1070), as does '**Summer Night**' and '**Tiger Tiger**'. Cooper and Hosoki both agree that '**Chinese Dragon**' and '**Renown**' have no detectable amounts. They both list many others separately but those two are common to both lists. Both authors make the observation that the lack of pelargonidin in most American tree hybrids may limit the production of bright pink and red cultivars.

Chalcone (clear yellow) appears only in *P. trollioides*, according to Cooper (pp. 142 and 143, II-C in the summary). Hosoki lists many tree hybrids as having chalcone (Table 2) and chalcone glucoside (Table 1). I suspect this seeming discrepancy might not appear as such if read by one with understanding of the chemistry of floral pigments.

> ** When bound with two glucoses, it is called "pelargonin" . . . a slight change in spelling at the word end.*

TOO MANY SEEDS. In the past years I've dabbled with hybridizing plants other than peonies: gladiolus, daylilies, iris, etc. My biggest problem has always been an over-production of seeds. Then, having invested all that time in hand pollination, I felt obligated to plant all the seed and try to grow to maturity all the resulting plants and evaluate them in terms of my goals. One winter I counted 103,000 glad bulbs harvested from the previous year's seed crop. (An annual harvest of 5,000 was a realistic limit in tune with my resources.) I had suffered from a complete breakdown of will power, self-discipline, and foresight. The lesson learned is "Don't raise too much seed, and if you do, don't plant it all.

More restraint was practiced in later hybridizing of daylilies and other plants. But it's difficult. In peonies my biggest mistake was raising 200 plants from crosses between single "yellow" tets; none were more yellow than the parents. Twenty seedlings would have given me the same message. I should have followed the oft given advice to raise a few of a certain cross too see if there is sufficient promise to justify repeating the cross in larger numbers.

When I started to hybridize peonies, I favored the Ito cross, and later, the tree hybrid crosses because the amount of seed would be limited by the nature of the cross, and not by a self-discipline too easily weakened. However, the fertility of the tree hybrids has been steadily increasing. For many years, eight firm seeds in one carpelhead was

tops; several years ago it jumper to 11; then 12; and this past season one cross produced 18 firm seeds. In addition, two were floaters and proved to be hollow. These 20 seeds were packed so tightly in their individual carpels (4 in each of 5 carpels) that their sides were flattened by the pressure of their contact. A second carpelhead, from the same cross, yielded 16 firm seeds. This fertility, welcome as it is, will again demand restraint to avoid excessive seed production. Of course, one can divert excess seed to the APS Seed Counter or even sell it. For many years daylily collector/breeders have put out lists of hand-pollinated seed for sale; peony growers might well try the same thing.

The fertile cross described above is AL-12 x AL-21; both parents are single flowered. Their respective parentage is D223 x A198 and '**Chinese Dragon**' x A199 ('**Golden Era**'). (Daphnis and Saunders, and Reath are all represented as originators of parental stock.) The seedlings, although 4th or 5th generation hybrids, are still 50% suffruticosa. If crossing back to suffruticosa is the way to go, then increased sterility will again limit seed production. In fact, a few crosses last season of AL-12 x '**Shintenchi**' yielded no firm seed at all.

GREX NAMES. As I understand it, a grex is a group of hybrids having similar parents. In magnolias the name "loebneri" is the accepted grex name for those hybrids between *M. kobus* and *M. stellata*. "Ito" hybrid seems to be the unofficial grex name for any peony hybrid between tree and herbaceous. In some circles it is rumored that a fellow named Higuchi made the cross first, in which case we'd be talking about the "Higuchi" cross. Or find a different name. But what name? Nothing seems to fit the bill as well as "Ito."

And what of the "lutea hybrids"? I prefer to call them "tree hybrids" because it parallels the usage "herbaceous hybrid" which is readily acceptable. It is also less confusing as "lutea' implies yellow and many hybrids are not. Also, the suffruticosa parentage is just as important, more so in some hybrids ('**Leda**', '**Zephyrus**'), so "suffruticosa hybrid" would be more accurate – if one chose to use a species name. I had not thought of a proper grex name for this group until I saw, in an English garden book, a reference to *Paeonia x lemoine*i, a perfectly appropriate and scientifically correct name. But I think the brevity (and accuracy) of "tree hybrids" is preferable.

RAPID PROPAGATION. I have heard some lactifloras could grow from adventitious buds but never observed it until this past season. Two tree peony grafts failed to grow but the lacti understock sent up one shoot on each. The curious thing is that this developed in just over one winter season. If I had observed any eye on the rootstock at grafting time I would not have used it. Perhaps the graft aftercare treatment hastens development of adventitious buds and should be used on root pieces of herbaceous hybrids already known to have that tendency. Also, could lacti or Ito root pieces be chemically treated to induce adventitious buds? Perhaps this would be a worthwhile research project in lieu of present tissue culture techniques where test-tube sprouts must be induced to produce roots . . . a reversal of the usual procedure.

Joseph Majtyka
28470 Haggerty
New Boston, MI 48164

10-7-86

Dear Chris,

The plant you sent me arrived in perfect condition. What a beautiful plant! What is it? Is it '**Alice Harding**'? Enclosed is a check # 1937 ($25.00) will you be kind enough to send me a compatible plant for pollination purposes to produce a "yellow".

In this area are many "flower clubs" and different horticultural societies, but nobody is knowledgeable to discuss peonies. I really miss Clarence Lineau. I am in process to create "Peony" interest.

Will you give me your phone in event I need to talk to you, that is if you don't mind.

I am in a hurry to write this before the mail man arrives.

Thanks.

Yours truly,

Joe.

11-8-86

Dear Joe:

The plant you received is what you had hoped for – Alice Harding. The check is being returned because there is no way of knowing your goal, whether herbaceous, lutea hybrids, or Itohs. Our telephone number is 616-342-4370

The following information may be helpful to you.

Chris

LUTEA HYBRIDS FOR YELLOW

To develop yellow in the peony flower necessitates collecting the right peony stock for parents. Also, a goal must be chosen, whether it be tree peonies, herbaceous, or the Itoh type.

Lutea hybrids are produced by placing suffruticosa pollen on *P. lutea* flowers. This lutea is the species (wild) which is offered for sale by Dr. David Reath of Vulcan, Michigan. The selecting of the suffruticosa plant to be pollen parent is the decision for the hybridizer to make. It seems that many years ago when this cross was first tried, the heavy double flowers which are produced on various clones of suffruticosa were used with the resulting very heavy bright yellow flowers which hang face down among the foliage. Later, Prof. Saunders made this cross, but by using the singles and smaller doubles of the suffruticosas developed smaller flowers on his hybrid cultivars which present their flowers much better (facing outward). More than seventy hybrids of this cross, *P. lutea* x suffruticosa, were named by him. Bill Gratwick, and his friend Nassos Daphnis, carried this cross further with excellent results! Hybridizers should continue working with this cross! Along with this work, both Dr. Saunders and Gratwick used *P. delavayi* (a form of *P. lutea*), a dark red-flowered plant that was and is still being used to produce dark red flowers.

For the peony enthusiast who collects lutea hybrids, it would do well to search his established plants for seed that is occasionally produced on these F_1's. Seedlings thus produced, will be F_2's which probably will not be as good as the parent but may advance the fertility which is now lacking. A good deal of Gratwick's and Dr. Reath's success is based on the F_2's and the succeeding F_3's though fertility has not been much increased.

HERBACEOUS HYBRIDS FOR YELLOW

It's a long long trail that leads to yellow flowers of the herbaceous type that are fertile. Prof. Saunders started working on this about sixty years ago and while never attaining his goal, came close to it with some of his Quad introductions. Roy Pehrson continued with this project by collecting the Saunders hybrids he thought to be of value as parents in this try for yellow. The best of his collection was distributed among various hybridizers so that the project might be continued.

Plants that are of value in hybridizing for yellow are: P. lobata and its hybrids, mlokosewitschii, lactiflora, Saunders Quads, and macrophylla and its hybrids. There is no need in collecting clones of these parentages since the preliminary work is now done and need not be repeated since advanced generation seeds are now available through our Peony Society Seed Distribution program. Advanced generation seeds are not the final answer for yellow peonies but why not join the group that has this goal! Encouragement along the way comes with the finding of a yellow flowered clone occasionally such as '**Sunny Boy**' and '**Sunny Girl**' and a few others which are fertile in pollen and seed.

The quest for yellow is important as a tool for other colors. Yellow seems to help to produce or clarify pastels such as warm pink, peach, white, and even dark reds. Our present hybrids are good – the future looks bright for the peony lover!

ITOH CROSS

The herbaceous x lutea hybrid cross was first successfully made by Mr. Itoh of Japan. A semi-double white flowered lactiflora was pollinated with pollen of the Lutea Hybrid '**Alice Harding**'. Many of us are working with this cross using various other lutea hybrids – also Delavayi as pollen parents on various lactiflora and herbaceous hybrids (tetraploids) with limited success. Generally the clones thus produced have very superior foliage and sometimes excellent flowers – the best of which is Don Hollingsworth's #205. Not any of the Itoh plants has produced a viable seed, which means there is no F_2. How to overcome this sterility has as yet not been discovered. My thinking is that by using herbaceous tetraploids as pod parents (seed parents) a triploid might be forthcoming. This might eventually give a chance seed, however, even an F_2 from an Itoh would likely lack fertility.

Always we look for a breakthrough that will overcome sterility but even without this, the Itoh plants that are actually produced are excellent garden plants, though quite expensive.

Probably one great virtue of the Itoh is its habit of die-back – the above ground stems are herbaceous, a property inherited from its herbaceous parent. This feature permits fall clean-up and the removal of the stems seems to be beneficial.

An exciting new development has just recently been discovered. A plant called '**Martha W.**', a lactiflora clone found to be very fertile as pod (seed) parent for the Itoh cross, is now producing seeds quite readily. Roger Anderson of Wisconsin collects many seeds because of this clone. While he has a good number of Itoh seedlings, he would have had more if he had better conditions for seed germination and a seedling nursery that affords coddling the little guys. I believe you could buy a plant of '**Martha W.**' from him if really interested in this cross.

Roy Pehrson made thousands of pollinations by hand using many lactiflora and hybrid named variety clones often with poor results. But he showed that pollen from suffruticosa, *P. lutea*, *P. delavayi*, and maybe *P. potaninii* would produce a seed occasionally. I believe he was the first person to develop a good bright red Itoh. He used '**Thunderbolt**' and also *P. delavayi* as pollen parents so I don't know for sure the parentage of the red Itohs. He sent me a number of plants labeled '**Nippon Gold**' (a lactiflora) by T. P. mix. It was a bitter disappointment to him to find that almost all of his Itohs had incomplete flowers. To date the only worthwhile Itohs seem to come from the lutea (and delavayi) hybrids. Mr. Smirnow listed two named varieties of lactiflora by suffruticosa but none was available for distribution!

Roy Pehrson thought this cross was well worth trying – which he did! However, all his lactiflora x suffruticosa cross clones produced imperfect flowers (very small petals or none at all).