

REQUIRED READING:

1. "The Peonies" by John C. Wister, \$3.50 from American Peony Society. 250 Interlachen Rd., Hopkins, MN 55343
2. Bulletins of the American Peony Society.
3. History of the Peonies and their Originations.
4. The Best of 75 Years; 3 & 4 ed. by Greta Kessenich, and available from the American Peony Society.

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Suggested yearly contribution to cover expenses of printing and mailing is \$2.50 in U.S & Canada and \$4.00 in Europe and Australia.

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Dear Chris,

10-21-81

So I've been elevated to a hybridizer (your list of subscribers Vol, 12, No. 3). WOW!

Ironically I feel it is almost deserved. The same week the September edition of Paeonia arrived, my first 40 seedlings emerged from their long slumber. They are growing in deep basalt soil at an elevation of about 3,000 feet on a mountain cap west of Sydney and thriving.

I joined the society in order to gain access to a seed bank, since I could find relatively little available plant material locally and in any case was keen to raise my own. Now that it seems conditions where I am growing these plants are well suited to their needs, I am keen to develop a bank of material for possible commercial production. This raises the question of actually naming seedlings once they have been flowered, and developing strains particularly suited to local conditions. I would be glad if you have any information on climate variation and the cultivation of the tree paeonies. Sydney typically has a wet winter, mild and temperate for the most part, with a hot and often humid summer, especially in January and February, the height of the summer season. Perhaps other subscribers have adapted to cope with similar conditions?

Meanwhile I see you have more P, suffruticosa seeds for dispersal. I would be most happy to receive as wide a selection as you can spare.

Huw Evans
41 Waratah Road,
Turramurra, New South Wales
Australia 2074

ED: Can anyone help with information?

PEONY PROPAGATION

Article #1

"Above-Ground 'Eyes' of Herbaceous Peonies"- Don Hollingsworth

(From The American Peony Society Bulletin, December, 1981, No. 240)

. . . Recently, I came across a reference to the successful propagation of the Chinese peony '**M. Jules Elie**' and some others from softwood cuttings (of green shoots). The report appeared in an Illinois florist newspaper about twenty-five years ago. The work appears to have been done by a graduate student. A professor's name was also referenced as a joint author, the work possibly done at the University of Illinois. This means that there are viable shoot meristems present in the leaf axils, even though they are not ordinarily visible to the unaided eye.

How all this may be put to practical use remains to be seen. It does, however, enlarge our understanding of the genetic potential of the peony. I have a photo of the reference, which is in the nature of a news release, and will hunt it up to share with interested parties upon their request.

Article #2

"Study New Peony Varieties For Mass Distribution, Lower Prices"

On Recently Introduced Peonies, Demand Exceeds Supply for Long Periods of Time --Thus Price's Remain High and New Varieties Move Slowly

by Jack Shannon and Dr. J. R. Kamp

(Graduate Student and Assoc. Professor of Floriculture, respectively.)

(From Florists Exchange and Horticultural Trade World, v. 134, No. 26, 1960)

The Problem —

Herbaceous Peonies are commonly propagated by 3 to 5 eye divisions of established plants. Using a 3-year rotation, a Peony grower is often able to double his stock every three years. This rate of propagation is ample to meet the demand for ordinary varieties which have been on the market for many years and where stock is consequently plentiful. But with newly introduced varieties of great merit, the demand exceeds the supply for a long period of time. As a result, prices remain high and the new variety fails to get the distribution it deserves. The present work was intended to explore propagation methods as possible means of offering the newer varieties at prices which would tempt the average gardener.

Anatomical Studies —

The Peony plant is composed of a perennial underground stem from which both buds and roots arise. In season, the buds produce above-ground stems bearing leaves and flowers. The underground stems are relatively small and slow growing, yet their perennial nature makes them the source of natural propagative material. The aboveground stems, on the other, hand, are produced in quantity every year. And after blooming has taken place, many of these stems might be cut without seriously reducing the growth of the parent plant. The expendable nature of these above-ground stems as well as the quantity at the disposal of every Peony, grower, suggests them as possible propagation material.

The first tests in propagation were confined to these annual, above-ground stems. Examination of these stems discloses that, even at maturity, their leaves are not all alike. The lower leaves are usually large, but as we approach the terminal end of the stem the leaves become reduced in size, simplified in shape, and finally bract-like. From the axils of these upper leaves flower buds arise. The upper buds typically develop into flowers while the lower ones finally dry up in the undeveloped stage. These upper axillary buds are, however, flower buds rather than leaf buds.

Below the portion of the stem bearing recognizable flower buds are one or two leaves having small axillary buds. These are pointed in shape and apparently can develop into lateral shoot growth. Below this point, no buds are visible in the leaf axils.

Anatomical studies with many species have shown the presence of a bud in every leaf axil to be typical, and the same should be true with the Peony. Therefore, thin sections of these lower leaf axils were prepared and examined microscopically. In every case a bud was found in the leaf axil, and these lower axillary buds appeared to be vegetative rather than flower buds. This lower portion of the Peony stem would therefore seem to be a possible source of new peony plants.

1955-56 Rooting Tests —

As early as June, 1955, leaf-bud cuttings were rooted under intermittent mist in the greenhouse. Four varieties were used to determine possible varietal differences which might be a guide for further work, the varieties were: '**Festiva Maxima**', '**M. Jules Elie**', '**Felix Crousse**', and '**Claire Dubois**'. There were considerable difference in rooting ability between varieties. '**M. Jules Elie**' and '**Claire Dubois**' rooted easily, while '**Festiva Maxima**' and '**Felix Crousse**' were slower.

Article #3

NEWS & VIEWS - American Horticultural Society, Volume XX, No. 1, January, 1978.

PROBING THE PRIVATE LIFE OF FRUIT TREES —

One of the big problems with growing fruit in some areas is that fruit buds may be seriously damaged by warm spring temperatures followed by freezing weather. Another problem is that in some areas the chill requirement of the best varieties cannot be met. A research group at Utah State University is trying to find out whether it is possible to do something about those problems.

It seems safe to assume, says Dr. Schuyler Seeley, professor of fruit crops, leader of the research group, that the average tree simply responds each year to a series of interactions between its internal and external environments.

If we could determine the hows and whys of when fruit trees start and stop growing, we might be able eventually to program a tree's time of bloom by artificially manipulating chemicals that occur naturally in the trees.

In effect, we might be able to supply the trees with a hormone-based anesthetic in early spring and withdraw it when frost dangers moderate.

Right now, the research group is concentrating on one particular piece of the puzzle: Why do fruit trees require a certain amount of chilling before they can respond productively to warming spring temperatures?

Thanks to prior research, he says, we are starting with some "knowns". For example, a healthy tree, left to its own devices, has to accumulate a certain number of chill units before it can begin to grow each spring (1 chill unit equals 1 hour of 43°F temperature; a longer time is required above and below 43 degree; 2 hours at either 50 or 35 degrees for 1 chill unit).

Also, once a mature tree's chilling requirement is satisfied, it will grow best at temperatures between 40 and 80 degrees. In fact, temperatures that consistently exceed 80 degrees will stop growth. And, after a tree has produced its fruit, stripping it of all its leaves simultaneously strips it of its chilling requirement (The Javanese, with their mild climate, put this phenomenon to practical use. They harvest Rome Beauty apples in April, strip the trees of their leaves in May, and harvest again in October.).

The Utah State University researchers are experimenting with peach trees to find out whether the observed effects of leaf removal are correlated with variations in the trees' supply of growth-promoting and growth-inhibiting hormones. If so, the next step will be to separate the hormones from all the other chemicals in the leaves. Once that technically exacting task is accomplished, the hormones would be tested on seedling trees to pin down precisely how they operate.

Achieving the ultimate goal of controlling the dormancy (chilling) requirements of fruit trees would mean better fruit production in areas that are currently marginal because of either too much or not enough natural chilling potential.

In our South - strip all leaves from peony plant in October. Will dormancy commence?

I'm wondering — Since lutea hybrid tree peonies and suffruticosas form flowering buds in early summer, would the process of stripping them of their leaves in July or August cause them to bloom again in the fall (re-bloom)? Also, some Itohs form flower buds during the summer time but freeze out during winter. Could these be forced into fall bloom by stripping them of their leaves in summer? Maybe the article can give some direction for experimenting. Don't forget, gibberellic acid spray is an interesting tool — and it could possibly come into play in this experiment. Triacntanol or even alfalfa pellets conceivably could come into play right here. - ED.

Article #4

SIDE BRANCHES:

One peony plant which had developed stems 6 to 12 inches in height was used as an experiment. All leaves were removed in late April. Side shoots promptly developed 2 to 4 inches above the ground (not from below ground dormant buds! !) The whole plant was dug up and taken to the Peony Show at Mansfield, Ohio, this past June, intending to show the results of the experiment to Don Hollingsworth. Alas, Don failed to show up.

Each of us ought to try this same experiment with the addition of trying to root the shoots. AND TRY IT ON ALL ITOHS!

* * * * *

TREE PEONY CUTTINGS FOR PROPAGATION

(Rooting Cuttings)

This method is described in detail in the article by C. Graham-Jones of England. For you Paeonians who don't have the book, "The Best of 75 Years", (page 158), I'll outline the procedure.

1. Make cuttings 5 or 6 inches long. Cut at the exact place where the old and new growth meet.
2. Remove lower leaves and reduce upper leaves - to accommodate your available space.
3. Dip lower end of cutting in a rooting compound such as Rootone.
4. Plant in pots or experiment with setting cuttings directly in garden soil — this is what I plan to try — not specified by C. Graham-Jones.
5. Cover with gallon plastic milk carton (bottom first removed).
6. Use your own judgment as to the amount of shade the cuttings need.
7. Maybe 4 cuttings can be covered with each milk carton.
8. I suppose winter protection will be needed — straw would be my suggestion for covering the cuttings and plastic milk carton.
9. Report results — successes and failures — adding any information that may be of value to the Paeonians.

I can't find the article on bud propagation so you'll have to look it up because I think this method is worth a try. From memory I'll give you the process:

1. Cut buds with leaf attached. Cut half way through the stem so as to get a good bud and base.
2. Remove one-half the leaf area.
3. Dip in Rootone.
4. Insert in sand - spacing fairly close together.
5. Use constant mist method. Your judgment and discretion may be the gauge of your success.

Note: This is quite a good deal like raising peonies from seed — I mean it's a rather long process and success is not at all guaranteed. But report any and all of your findings!

BASIC PEONY GERMINATION REQUIREMENTS

by Don Hollingsworth

What is the minimum information we should be furnishing to inexperienced growers when they are given peony seeds? While the following statement is a bit long to print on a seed packet, I feel this is important information for prospective new hybridists.

PEONIES: Long-lived perennials, cool season herbs and shrubs of the temperate regions. Seed germination typically requires two years. Seeds from dry storage should be planted by late spring and shoots should emerge early the following spring. Some seeds will delay another year or more.

Germinating peony seeds develop internally in the warm, moist environment of summer and produce a long root after the soil cools in late summer, or early autumn. The shoot bud of these rooted seeds is dormant and requires a long period of cool (not frozen) conditioning before dormancy is released. When dormancy has cleared, the shoots will commence to emerge in earliest spring and eventually form one or two leaves. During spring and summer food is stored in the growing root, so long as the leaves remain healthy.

Seeds started after late spring have an increased risk of being late in the initiation of root growth and risk subsequent failure of the shoot bud dormancy to be released by the time soil temperatures become too warm in spring. Planted later in autumn, seed from dry storage will usually not have time to reach the root development stage in the current year and the seedlings cannot be expected to emerge at the same time as from spring planted seeds.

Plant the seeds in fertile soil, covered sufficiently to keep them continuously moist, using a non-crusting medium, as much as two inches deep if very porous, such as old sawdust. Weed by hand to avoid risk of damage to unseen roots.

Seeds may be planted about an inch apart in field rows, in open beds or in cold frames. Cold frames give the advantage of easily providing cover against winter freezing and added protection from disturbance in summer. Treat the soil against grubs and disturbance by the moles which hunt grubs. Some light shade (as aluminum fly screen) may be beneficial from late June to August; the leaves will stay green longer. Spraying with a fungicide is beneficial for the same reason.

Freshly harvested seeds can sometimes be brought into growth the following spring, depending on how early they become mature, the knowledge and skill of the handler, and, the readiness of the handler to provide the equipment and detail work involved with using controlled environments to meet the developmental requirements of the germinating seedlings. Read the American Peony Society references on these subjects,

especially those in "The Peonies" (Wister, ed., 1962) and "The Best of Seventy-Five Years" (Kessenich, ed., 1979).

If the mature seeds are kept moist from the seed pods and transferred immediately to a warm-moist environment, their development will continue uninterrupted. Some will root early enough to make it through dormancy reduction and grow the following spring. Others will not and will be lost as explained above. By using a refrigerator for the dormancy reduction period (seeds in pots or plastic bags of medium), the optimum winter temperature of 5°C (41°F) may be given and the dormancy reduction time will be minimized. Germinating seeds handled in this manner can be expected to grow when their shoots have reached a half inch in length before being planted in warm soil.

RODENT PROOFING

Greta Kessenich December 2, 1981

"Let every one rich or poor have a garden. Your piece of land may be small, yet you can evolve from the dull earth forms of beauty which will give you comfort and cheer." — Quote from "We All Can Have Flowers," by C. S. Harrison.

My prepared seed bed is under twenty inches of snow with a layer of ice on top. The treasured seed that was to be planted in this carefully prepared bed is before me as I write.

At one time, my big problem was rodents taking the seed and depositing it in various places far from the original planting. Some of the young plants have been retrieved and transplanted, some were left and have bloomed. This year was to be different as a control method had been planned.

A friend in Washington State had the same problem with rodents, only it was with tulip bulbs. Tulips came up in out of the way places and her bed of tulips was fast disappearing. To prevent this problem, she laid out an area that was large enough to accommodate the number of bulbs she wanted to plant. She then dug that area the desired depth and laid chicken wire on the bottom. Enough soil was put over it to plant the bulbs, securing them, again chicken wire, and the entire plot filled with soil. The bulbs remained intact until ready for transplanting. She has been doing this type of bulb planting for years.

I decided to do the same with my seed, only using a small mesh that is used for stucco, on the bottom of the seed bed. Build up the sides, then enclose with a larger mesh. By carefully watching this caged area, the plants would be controlled as they grew.

At this time of year, the weather in Minnesota can be ominous and treacherous, so while preparing the soil, I filled two large tree rose containers for a seed bed should the weather change before I received the seed. How fortunate! Because of the devastating snow storm followed by an ice storm, the rose containers must serve as a seed bed.

Now that I have a generous planting of the Domoto tree peony seed and also some herbaceous hybrid, it will be my pleasure to see the results. When one thinks of the power in one of those small brown seeds, knowing it is nature's way of increasing her floral potentials which develops into a masterpiece of beauty, the reward is ours when the little plants grow to maturity.

LETTERS FROM OUR READERS

Dear Chris,

March 9, 1981

Thank you for the past issues of "Paeonia" and the seed selection. I planted all the seeds in vermiculite on 30th January, 1981, and when I examined them again last night I found one of the suffruticosa had sent down a radicle.

I did not soak the seeds before planting; is this necessary?

I am keeping an observation sheet on the seeds and this may come in useful for further plantings. The second part of this note concerns two publications, one being the Journal of Horticultural Science and the other being a book written by Lila Barton entitled "Twenty Years of Seed Research at the Boyce Thompson Institute for Plant Research." Are the publications worth buying (or subscribing to in the case of the Journal)?

Yours faithfully,

Peter Rafferty - 16 Aberdeen St.
Reservoir, Victoria
Australia 3073

ED: Any materials on the subject of Peonies is worth buying!

Dear Chris,

October 2, 1981

. . . . I have just applied for a technical (trade) school teacher's position to teach horticulture and I expect to be very busy for the next two years, at least.

The results of last year's seed issue are as follows:

<u>Plant</u>	<u>Seeds Received</u>	<u>Above Ground</u>
Suffruticosa	45	4
Lactiflora	52	36
Hollingsworth mix	39	14
Serenade F3	32	16
Quad F3	43	36
Tetraploid mix	31	22

Chris, is the firm of Far North Gardens of 15621 Auburndale Avenue, Livonia, Michigan, reliable as far as *Paeonia* species are concerned? *ED: Probably not!, but if the risk factor determines the action, the certainty is no species seedlings will be gotten.*

Finally, could you send this year's seed issue as early as possible, please? I am going to attempt to germinate it without artificial heat.

Yours truly,

Peter Rafferty

Dear Chris,

July 19, 1981

Stan and I came home from an extended vacation this past week and found your letter with the promised seeds and a copy of *Paeonia*. Many thanks. You will find enclosed \$5.00 — please enter us for a year's subscription and apply the rest to expenses of sending seeds out.

I have been an APS member for several years now and have the Bulletins back to 1977. Therefore, the names on the seeds you sent are not unknown to me. I had occasion several years ago to write to Mr. Domoto about the possibility of raising peonies in California. He sent a very gracious answer.

Although I had been exposed to the care of peonies as long as I can remember, it seems as though I have only begun to touch the "tip of the iceberg" and the more I read, the more I find that I still have to learn. It seems as though there are so many areas of specialization it is hard to know where to start.

The Wister book "The Peonies," the APS Handbook and Bulletins, as well as "Best of 75 Years," have been part of our library since they came out. I am sending for "The History of Peonies and Their Originations."

You have opened up many terms I am not familiar with, such as diploid and tetraploid — are these terms found in a Botany course? If so I guess I'll have to do a little more digging in our local library.

In your enclosed June issue of *Paeonia* you have an article on '**Coral Charm**' — I have two plants under my care, one purchased from Klehms in '77 and the other in '78. They certainly were outstanding this year — as nice as any at the show in Mansfield. What I wanted to report to you is that in all the years they have set seed pods but never filled them out with seeds. I believe that I will try to pollinate them by hand next year and see if this will help any. They are in close proximity with a very prolific seed bearing '**Do Tell**' and others, but no seeds for us.

Again I say, thank you for the seeds and newsletter.

Marion De Reamer (Mrs. Stanley De Reamer)
5360 W. 73rd Ave.
Merrillville, IN 46410

p.s. Were you able to find a rotating file like I had my plants listed in? (NO! – Chris)

ED: **Diploid** - A cell or seed having two sets of chromosomes (a long string of genes). The lactiflora peony is a diploid.

Tetraploid - has four sets of chromosomes - as is found in most hybrids.

Dear friend,

7-6-81

After reading what Roy Pehrson had to say about 'Mikado' x 'Good Cheer', I would like to try that cross. Can you tell me where I could get a root or two of 'Good Cheer'; suppose the demand exceeds supply now.

I have several thousand seedlings that either bloomed or will bloom next year. A late frost this year hurt some of the buds but they will make it next year. No exceptional blooms so far, although some coral singles everyone seems to like.

Enclosing \$10 for Paeonia which I enjoy reading.

Bill Kemp
Mohall, North Dakota

ED: Anyone have a plant or piece of a plant of 'Good Cheer' for Bill Kemp?

Dear Mr. Laning,

8-19-81

We are looking for a source from which we can purchase about 200 one-year tree peony grafts for growing on. We have been unable to find anyone who sells in quantity for a reasonable price.

Would you be able to help us locate a source? We have purchased one-year grafts from Japan in the past, and find the quality and labeling to be very unreliable. We were hoping to find a propagator in this country who will sell one-year grafts, most two-year plants as are offered in most catalogs at the higher prices. Any assistance you could provide would be appreciated.

Thank you.

Sincerely,

Karen Bovio,
Bardner-Walsh Landscaping, Inc.
4800 Brophy Road
Howell, MI 48843

ED: Any suggestions Paeonians?