

American Peony Society Bulletin



June, 1974 — No 210



AMERICAN PEONY SOCIETY

250 Interlacnen Road

Hopkins, Minn. 55343

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OBJECTIVES

The Articles of Incorporation state: Section (2) That the particular objects for which the corporation is to be formed are as follows: To increase the general interest in the cultivation and use of the Peony; to improve the methods of its cultivation and methods of placing it upon the market; to increase its use as a decorative flower; to bring about a more thorough understanding between those interested in its culture; to properly supervise the nomenclature of the different varieties and kinds of peonies; to stimulate the growing and introduction of improved seedlings and crosses of such flower; and to promote any of the general objects herein specified by holding or causing to be held exhibitions, and awarding or causing or procuring to be awarded, prizes therefore or in any other manner.

The AMERICAN PEONY SOCIETY BULLETIN is the official Society publication. It is mailed postpaid quarterly to all members in good standing.

MEMBERSHIP

The By-Laws state: All reputable persons, professional or amateur, who are interested in the Peony, its propagation, culture, sale and development are eligible for membership. Dues are as follows:

Single Annual	\$ 7.50	Junior of member family	2.50
Single Triennial	20.00	Junior non-member family	3.50
Family Annual	10.00	Life	150.00
Family Triennial	27.50	Commercial membership	25.00

Family membership, any two related members in same household. One Bulletin.

Junior membership, any age thru completion of High School. Separate Bulletin.

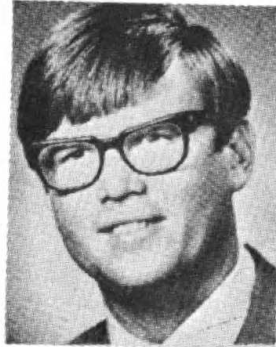
For those who wish to further support the Society, the following special memberships are available.

Contributing	\$ 25.00	Supporting	\$100.00
Sustaining	50.00	Patron	250.00

Salute to Our President



*Charley's
White*



*Angel
Cheeks*



ROY KLEHM
President
1972 - 1974



*Bowl
of
Cream*

*Klehm
Estate
Peony*

**THANK
YOU FOR
THE
PAST TWO
YEARS**



*Emma Klehm
Klehm*

*Glory
Hallelujah*



American Peony Society

ART WORK BY W. J. SEIDL

*The American Peony Society
expresses appreciation and thanks*

to the -

*Royal Botanical Gardens Director and Associates
The Hamilton Spectator
The Clargreen Gardens*

to John Simkins

*who has made it possible for this
our 71st annual meeting and 69th exhibition
to be held in Hamilton, Ontario.*

Thank you.

1974 EXHIBITION

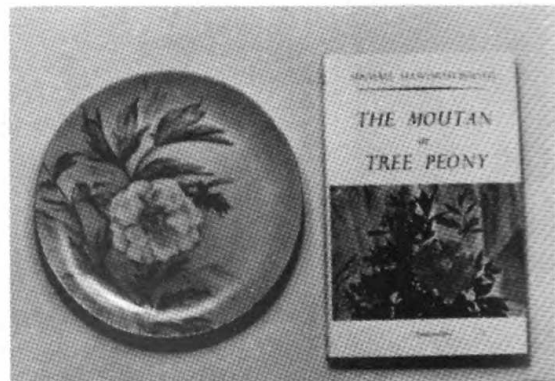
Court of Honor — Awards

Painted Plates

Best in Show
Best Tree Peony
Best Double
Best Hybrid
Best Japanese
Best Semi-double

Books

Japanese—White, Pink, Red
**Semi-double—White, Pink,
and Red**
**Single—White, Pink and
Red.**



Medals to the remainder, in all the color classes.

Best Artistic Arrangement in the show.

Spectator Gift Certificate for \$25 from the Royal Botanical
Gardens Floral Shop.

All non-members receiving Court of Honor awards will be given one
year membership, in the American Peony Society.

1974 REGISTRATION

Rate of Money Exchange.

The registration fee is \$10.00 in Canadian funds.

In American funds, this is \$10.45 which covers the cost of the
banquet and lunch.

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AMERICAN Peony Society Bulletin



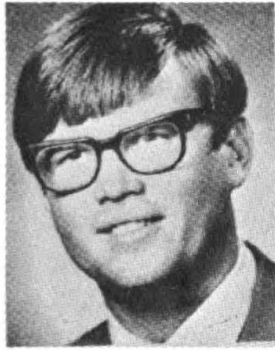
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COVER

Headquarters—Royal Botanical Gardens, Hamilton, Ontario.
Site of the 1974 International Peony Exhibition.



FROM YOUR PRESIDENT

Dear Peony Friends,

My term as President will expire with the Annual June Meeting. Thank you everyone for your cooperation and enthusiasm making my tenure a very enjoyable and pleasant one.

The new President will be John Simkins from Hamilton, Ontario, Canada, a talented and well qualified and wonderfully friendly man. I know everyone will enjoy him as our new President, and our society will continue to progress as we have in the past.

I owe a warm and heartfelt thank you to our gracious and hard-working Secretary, Treasurer and Editor, Mrs. Greta Kessenich. She made the president's job very easy and also very delightful. She truly deserves a vote of thanks from everyone for her unselfish efforts for our society.

Please do come to our National Show in Canada this year. National Shows are fun, interesting and very informative. The setting and area should be extremely beautiful in June, a perfect climate for good Peony growers.

In closing, I strongly urge all interested people to continue to support the society in its various undertakings. To my knowledge the American Peony Society is the only group of people concerned and interested with our favorite flower.

Sincerely yours,

ROY KLEHM, President

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*Members of the American Peony Society—
Welcome to the*

ROYAL BOTANICAL GARDENS — HAMILTON

The Royal Botanical Gardens is proud to host the 1974 Peony Exhibition of the American Peony Society. Although this is the first Peony Exhibition to be held at this institution, Royal Botanical Gardens is no stranger to international events, both exhibitions and annual meetings. On several occasions, R. B. G. has hosted North American Lily Society Shows. The Annual Meeting of the American Association of Botanical Gardens and Arboreta was held here in 1967 and most recently in May of this year the International Lilac Society held its Annual Convention, the important lilac collection developed here being the principal attraction.

We look forward to having our exhibition facilities and all auxiliary space at Royal Botanical Gardens' Headquarters, transformed into a peony show place, both for those participating and as a very special event for the public.

Although many of the spring displays featured at Royal Botanical Gardens are finished before mid-June, the Spring Garden with its noted collection of Tall Bearded Iris, should still be in reasonably good condition.

Peony displays in this garden should be at their peak, but it should be understood that we do not regard this as a reliable collection of cultivars. Indeed, we expect to be inspired by visiting members of the American Peony Society to move swiftly towards establishing a first class modern and historically-important peony collection here at Royal Botanical Gardens. This is in line with our hopes and aspirations for the entire realm of herbaceous perennials.

Elsewhere in the Gardens, the last of the late lilacs may still be in bloom in the Lilac Garden, summer displays in the Rock Garden will be showing promise of glorious July to October display, the earliest flowers in the Trial Garden for Summer Annuals at Headquarters will be producing first blooms, and earliest roses may be showing first colour in the Centennial Rose Garden.

To provide some understanding of the background and current stage of development of Royal Botanical Gardens, the following article, prepared for another purpose, is included.

Leslie Laking, Director

ROYAL BOTANICAL GARDENS

The welcome awaiting visitors to a botanical garden in our day is always warm, for such a garden has little purpose without people eager to become involved in the world of plants. The Royal Botanical Gardens, centered at the western tip of Lake Ontario, in the municipalities of Hamilton, Burlington and Dundas, has a tradition

for encouraging such involvement. Here, renowned horticultural developments are complemented by rich and varied natural areas. Together they provide a rewarding balance between the natural scene and the created beauty of gardens and arboretum—the whole, a living outdoor museum with a purpose.

The Rock Garden, with its massed displays of the finest cultivars of familiar annuals, following an exciting spring display of bulbs is an extremely popular garden throughout this growing season. Visitors may be surprised to find 40-year-old specimens of Bald Cypress as part of the backdrop of permanent plants in the Rock Garden. The Tea House, overlooking the Rock Garden, is the only refreshment facility at Royal Botanical Gardens, open from 10:00 a.m. to 8:00 p.m. in summertime. This garden was originally part of a beautification project developed in sand and gravel pits—a relief labour project in 1929-32 during the great depression. Periodic renovation has brought it to its present stage.

The Spring Garden has been famous for its collection of Tall-Bearded Iris and its Peony display since the mid 1950's. Iris collections continue as the main feature, kept up-to-date by the Canadian Iris Society. Recently, interest in perennials has expanded, and the collections now being assembled, including Phlox, Day-lilies and Oriental Poppies and Delphiniums, provide much more interest during summer within this garden. Lilies, featuring cultivars of Canadian origin, complete the summer picture.

The most recent garden development has taken place in Hendrie Park. The Centennial Rose Garden, opened in 1967, was completely renovated in the autumn of 1973. Visitors will find many of the recent introductions of Hybrid Tea and Floribunda Roses in this garden, flowering from late June to October. The Turner Pavilion, completed this spring, functions as a visitor's center, complete with an extension of the Floral Art Shop at Headquarters, a project of the Gardens' Women's Committee.

The Trial Garden for Summer Annuals is a second feature of Hendrie Park. Here 400-500 cultivars of annuals, many of them new from the prominent seed houses of the world, are grown in the Trial Garden. This provides an exciting colour thrill for the casual visitor, and an opportunity to compare the new with the standard for those who are more deeply interested.

The Fountain Garden, in front of Headquarters, provides an attractive link between the gardens of Hendrie Park and the administrative and the scientific and educational center for the institution.

Within the Gardens' 2,000 acres, a large tract is retained in a state of nature. Cootes Paradise Sanctuary, with its 600-acre marsh and extensive adjacent wooded ravinelands, comprises the major natural area. A system of some 27 miles of nature trails is a feature of Cootes Paradise Sanctuary, Hendrie Valley and Rock Chapel

Sanctuary on a portion of the Niagara Escarpment, the location of the popular Maple Exhibit and the Geology Exhibit.

The Arboretum comprises a 400-acre tract on the north shore of Cootes Paradise Marsh, more than half of which is in native woodland cover. The first 70 acres of arboretum, under active development since 1960, has already become famous on this continent for some of its collections. The most noted is the lilac collection in the Katie Osborne Lilac Garden. In its beautiful secluded dell setting, the lilac garden has become the most important public attraction at Royal Botanical Gardens during the latter half of May. The horticultural quality of this collection was the determining factor in bringing the International Lilac Society to R. B. G. for its 1974 meeting in May.

TO REACH ROYAL BOTANICAL GARDENS

Visitors from Niagara Falls or Fort Erie, reach this area via the Queen Elizabeth Way, by-passing Hamilton via the Burlington Skyway Bridge, following Highway 403 towards Hamilton, exiting at Botanical Gardens signs (also the exit for Highway 6). The signs direct visitors to the Rock Garden first, and from there to other areas. Visitors from the east, i.e. from Toronto, also arrive via the Queen Elizabeth Way to Highway 403 as above.

A warm welcome awaits visitors, especially those heading for Nurseryman's meetings in Toronto during mid-July.

Leslie Laking, Director

April 3, 1974

CANADIAN CUSTOMS AND PLANT INSPECTION

Those bringing cut flowers for the show from the United States should have no problem crossing the border.

I have a letter from Mr. W. R. Witmore the Permit Officer of the Plant Protection Div. of the Ministry of Agriculture stating that there are no restrictions on the importation of cut flowers from the U.S.A. If you indicate on your registration that you will be bringing flowers, I will send you a copy of this letter to use at the border.

There is no duty on flowers brought in for a show, and I will have a letter to this effect for customs in a few days. This will be sent to any registrant. who requests it.

John E. Simkins
1246 Donlea Crescent
Oakville, Ontario
Canada. L6J 1V7

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CANADIAN PEONY COLLECTOR — DR. H. LANDIS, Q.C.

Garden of Dr. Landis



Dr. Landis is a recent convert to tree peonies. He started with them in 1964 by importing about 100 grafts from Japan. These arrived in November completely dehydrated and were judged to be dead by the plant inspectors. Nevertheless, he planted them in early December and most of them survived. He had originally been caught by the beauty of the flowers and plants but their tenacious grip on life so impressed him that he has become the foremost collector in Canada.

To this group Dr. Landis has added tree peonies from most of the commercial growers in North America including the Smirnow and Gratwick introductions, most of the Saunders hybrids and many varieties from the collections of Swarthmore, Dr. John Wister, Tyler, Barnes, Cornell and Arnold Arboreta.

In addition to tree peonies Dr. Landis has an extensive collection of herbaceous hybrids especially the Saunders, Glasscock and Bockstoce varieties, both named and unnamed. He has also added the most recent introductions of hardy magnolias and flowering crabs and hawthorns as well as numerous Japanese maples and other fine ornamental trees.

One of his great concerns is the preservation of the breeding stock of hybridizers who have retired or passed on. He has the Bockstoce herbaceous hybrid seedlings and some of the tree peonies of the late Mr. Giff of Sarnia.

Dr. Landis is General Counsel of the Ontario Ministry of the Environment and his interest in peonies and in other ornamentals is an aspect of his great interest in the natural environment.

Unfortunately his garden in Willowdale which is about thirty miles from our show is designed for mass viewing rather than the close-up examination of plants. It has a relatively small area for walking. This prevents any visits by large groups. If you wish to see his garden you should contact him directly for an invitation. The address is 41 Citation Drive, Willowdale, Ontario, M2K 1S5.

TREE PEONY PHILOSOPHY

By Anthony J. De Blasi

A man of wisdom once wrote: "If thou hast two pennies, spend one for bread. With the other, buy hyacinths for thy soul." The advice reminds us that the nature of man is that of a special synthesis of earth and spirit. Both elements must be fed. So, romantic and impractical as it may seem, the advice of our ancient sage is as good today as it was when he gave it. It is a warm invitation to pause, in the midst of our busy lives, to dream a little.

It is a paradox to modern man that to be sternly practical in all matters is, ultimately, a surprisingly impractical policy. For, at the heart of any well-ordered, worthwhile endeavor is inspiration, a faculty that no amount of cleverness, business sense, or horse sense can feed. Its principal nourishment comes from the contemplation of beauty. In primitive societies—so many of which are succumbing to civilization, alas—the creation of art forms and the worship, or near-worship, of natural beauty are the providers of meaning, cohesion, and direction. Perhaps not oddly, this is equally true of a successful modern society. When viewed as gifts from the Creator and as vehicles for spiritual renewal, art and nature assume their proper place—at the forefront of human experience, gratefully embraced for the vital role they play in a life that would be well-lived.

It is no accident that flowers accompany so many of life's functions and punctuations—special occasions, acts of friendship, tokens of love, marriage, death. It is no accident that, according to Zen tradition, the Buddha pointed to a flower, in answer to the question: "What is the nature of enlightenment?" It is no accident that art and flowers grace the places of worship and weave themselves into the fabric of most religions. Beauty is the tangible link with the divine—a little "window" through which we can peek into the essence of eternity. For from being a purely romantic notion, this is a very **practical** necessity indeed, for through such exercise we find ourselves refreshed, renewed, **inspired**—aware that we, after all, are the touchstones of that eternity, responding as we do so immediately and intimately to beauty, as a harp string sings to the harpist's touch.

Those who garden are no strangers to this experience. It is in a garden that nature and art combine, in delightful, informal, direct ways, to create a hybrid beauty that is at once satisfying and inspiring. The sparks that a garden kindles in the soul are many and many too the insights that are spun out of an intimate association with it. There is much about a garden that is even practical in the narrow sense, since it contains material for anyone to study, be he botanist, biologist, ecologist, chemist, geologist, zoologist, nutritionist, meteorologist, naturalist, artist, or philosopher. A garden is, in

capsule form, Earth showing her wares through "storekeeper" Man.

While it is the beauty of nature that spurs us on, it is we, of course, who design the molds and frameworks through which she operates, select and bend the materials, and keep a gentle vigil over any tendency to go wild. From these efforts a garden is wrought, one that reflects our personality. Where a balance is struck between what nature offers and what we wish to bring forth—always through a spirit of cooperation between us and Her—there we see beautiful gardens and successful horticultural results of all kinds.

What is us in nature and what is She through us—the art of it all—is an enticing subject for meditation. No richer interplay between man and nature can be found than in the genetic transformations in species accelerated by man's crossing and selecting of types. For the gardener, the results have been countless gems in just about every family of garden plants one could name, from apples to azaleas, from lilies to lilacs, from petunias to peonies.

While much of the work has occurred in the past century, in Europe and America, some astonishing work was done in China and Japan long before it caught on in the West, and continues there today. Quite a number of the old Oriental achievements remain unbeatable. In 1974, my vote for supreme masterpiece must go to the **Japanese tree peony**. Here we have, in my opinion, the most extraordinary interplay of man and nature, the happy outcome of which is a group of garden plants of spectacular performance, stirring excellence, and faultless beauty—in truth, a great work of art.

The best news about it all is that though these masterpieces were synthesized long before we were twinkles in our parents' eyes, they live and continue to live **today** in every bud and scion that a kind hand has saved and nurtured for us to enjoy and pass on to our children, **right there in the ground outside our doors!**

The "goose-pimple factor" alone of knowing that the plant you hold in your hands, as you lovingly set it in the ground, is a piece of the original "flesh" of a creation whose authors pale into the mists of Oriental legend and that poured forth its enchantment **then** in some remote, secluded garden, an object of excellence **then**, when standards were so much higher than they are today—this factor alone is sufficient cause to plant them. Their mysterious linkings and interwinings between time past, present, and future—between earth, spirit, and human imagination—between originator and beholder—are yet another way to soothe a tired soul than reading lyrical poetry, as Longfellow suggests in "The Day Is Done," from some humble poet "whose songs gushed from his heart"—songs that

. . . have power to quiet
The restless pulse of care,
And come like the benediction
That follows after prayer."

AN INTERVIEW WITH BROTHER CHARLES AUGUST 1973

Reporter: "What are your favorite peony hybrids?"

Bro. Charles: "Flame would be number one, Alexander Woolcott, Burma Ruby, Ludovica, Prairie Moon and Bravura."

Reporter: "How and when do you propagate Tree Peonies?"

Bro. Charles: "Grafting. We used to do it in August or early September, but the last two years, late September and October; and I would say, we have had really good success, for we have planted them early enough in the spring."

Reporter: "How do you over-winter them?"

Bro. Charles: "We keep them under refrigeration at about 35°. The grafts are completely immersed in peat."

Reporter: "What is the best understock?"

Bro. Charles: "We will take whatever is available. About the size of a finger. Japanese varieties seem to give a little better roots than the lactoflora types."

Reporter: "What kind of graft do you use?"

Bro. Charles: "Most of ours is the "v" shape graft on the top edge of the root. The scion fits right in the "v" shape wedge. We wrap the graft root with a waxed string and we brush wax on the graft."

Reporter: "What are your favorite varieties of Tree Peonies?"

Bro. Charles: "Japanese varieties would be:

<i>Yaso-no-mine</i>	<i>Renkaku</i>	<i>Kamada-fuji</i>
<i>Hana-kisoi</i>	<i>Shintenchi</i>	<i>Tama-fuyo</i>
<i>Gessekai</i>	<i>Kagura-jishi</i>	

"Lutea Hybrids would be:

<i>Age of Gold</i>	<i>Vesuvian</i>	<i>Chinese Dragon</i>
<i>Harvest</i>	<i>High Noon</i>	<i>Black Pirate."</i>

AMERICAN PEONY SOCIETY COLORED SLIDES

In response to the request in the last Bulletin for additional color slides, Anthony De Blasi has contributed slides of the following tree peonies: HINODE-SEKAI, RENKAKU, THUNDER-BOLT, TAIYO (2), JITSU-GETSU-NISHIKI (2), and KAKU-TSURU.

A set of 80 35mm. color slides may be rented for a two-week period by sending a check for \$7.50 payable to the American Peony Society to Richard W. Edblom, 6917 45th Avenue North, Minneapolis, Minnesota 55428. The type of slides desired should be specified; for example, all tree peonies, all herbaceous hybrids, all lactifloras or a mixture of these three types. A list of names accompanies each set. Orders should be made at least four weeks in advance. The renter must insure the slides for \$50. A charge of \$2 is made for every slide missing upon return.

PARASITIC ROOT-KNOT NEMATODE IN GARDEN PEONIES

by *Don Hollingsworth*

INTRODUCTION

This article has grown out of a search for solutions to the practical problem of controlling root-knot nematodes in my peony collection, which includes several garden types and some species. The plants were selected primarily for what growing them might contribute to my personal knowledge of peonies and for the possibility of using them in breeding new varieties.

From 1968 through 1971 I added about 125 plants from outside sources. In making room for this number on our rather steep city lot, there was much moving of soil and plants. By the autumn of 1971 I had dug enough peony roots to sometimes recognize irregularities. In one instance I noticed a plant which had a great proliferation of branching young roots. The following year an established plant which had flowered poorly was found to have well-developed galls throughout the roots. Shortly thereafter the Northern root-knot nematode was diagnosed by a nematologist at the University of Missouri-Columbia. I have subsequently found similar evidence of root-knot nematode in several other garden locations, some of which are traceable to my own activities, but others were more readily associated with outside sources.

What this development might mean to the future of my peony project weighed heavily upon me for some time. I found that much of the counsel in the popular gardening literature can leave one feeling generally helpless. However, several members of the Peony Society kindly responded to my inquiries and I have subsequently done a good deal of library work, the results of which have greatly encouraged me.

I find that nematologists have made much progress in the study of nematodes in cultivated crops. State university extension pathology departments are able to provide assistance in the identification of nematode problems and are able to give current advice on control measures. Peony growers who find nematodes or other serious disease problems should make contact with this valuable service through their local extension agent or their respective state's College of Agriculture Extension Service.

THE ROOT-KNOT PROBLEM

The genus *Paeonia* is one of the plant families the members of which are often susceptible to becoming parasitized by the root-knot nematodes, tiny worms of the genus *Meloidogyne* (muh loy do GYN uh). When conditions for their development are suitable, the

larvae enter small roots of susceptible plants and stimulate formation of the galls or knots from which the parasite family gets its common name.

Plant performance is hurt primarily by a reduction in the normal extension and enlargement of roots and through the diminished flow of water and nutrients into the plant. Above-ground symptoms may be similar to those of nutrient deficiency and drouth. Below-ground will be found some or many abnormally shortened roots (Figures 1 through 6), sometimes excessively branched, and having numerous galls or knots on the small roots. Heavily parasitized plants develop slowly, sometimes making normal annual increase in number of stems, but putting up only short and spindly growth. Frequently, however, increase is slower and the spring growth will appear more nearly normal, though seldom giving satisfactory flowers; but-blight and poorly colored flowers are common.

Researchers have found that some *Meloidogyne* species impair plant performance more severely when there is a deficiency of potash in the soil nutrient solution.

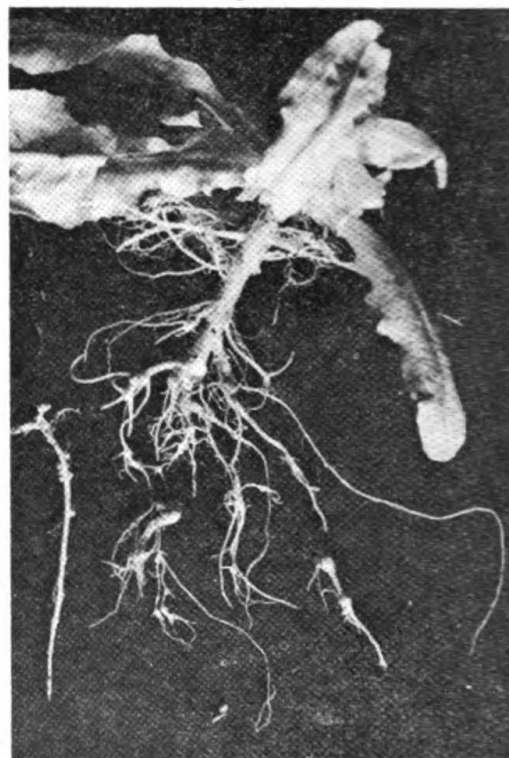
Root-rot is likely to be a greater problem when nematodes are active, especially in the presence of warm temperatures and abundant moisture, conditions which are more conducive to fungus development. Severely parasitized peonies are rendered more subject to drouth injury, yet are more likely to suffer root-rot when irrigation is given to overcome the effects of drouth.

THE NEMATODE'S LIFE NEEDS

In searching for information sources, I have focused especially on *Meloidogyne hapla*, the Northern root-knot nematode, which was the species identified on roots from my garden. However, some 20 species and sub-species of *Meloidogyne* have been described world-wide and in a recent Kansas study five of these were found in that state. Two of the five, *M. hapla* and *M. incognita*, are the species most widely reported in North America, the latter being less resistant to cold and more prevalent in southern states. Nevertheless, both have been reported in vegetable crops as far north as Michigan and Ontario. In an Ontario study of weed hosts, 40-odd species were parasitized by a local population of *M. hapla*, each shown to be capable of providing a reservoir for spread to crops and ornamentals.

More than 2,000 plant hosts of *Meloidogyne* species have been reported according to one reference. However, there is a high degree of specificity. This means that a given plant may be susceptible to only one species while another may become parasitized by many species. It is also known that a given *Meloidogyne* species may have different races or strains specialized or adapted to certain plants, sometimes then being less able to parasitize other plants.

Figure 3



*Wild lettuce plant of autumn-germinated seed dug December 1973, found growing among root-knot (*Meloidogyne*) infested peony roots. This is one of the few instances so far found by the writer of another species parasitized in the vicinity of a peony. Compare the wild lettuce root galls with the nitrogen nodules on the long, unbranched root of white clover at the edge of the photo.*

The nematodes in my garden seem rather specialized to peonies, especially the Chinese peonies and Japanese tree peonies. Hybrid peonies have shown fewer root galls and some of the species peonies almost none at all. I have so far found only a few other plants with root-knots; one is a wild lettuce, pictured in Figure 3. Others are dwarf forsythia (*F. bronxensis*), an occasional delphinium seedling, and a snake plant (*Sansevieria*) potted in home-prepared soil. However, I have not yet had growing in affected areas representatives of the several highly susceptible indicator plants which are commonly used by researchers. Some of these are Rutgers tomato, blue mist spirea, multiflora rose and Japanese barberry.

An international nematode checklist shows that representatives of the following peony species have been found parasitized by **Meloidogyne**: *Paeonia japonica*, *P. lactiflora*, *P. mlokosewitchii*, *P. officinalis*, and *P. suffruticosa*. When taken together with their hybrids this group includes nearly all peonies grown for garden ornamentation.

While the checklist also reports parasitic nematodes other than **Meloidogyne** on peonies, I have not learned much about these. It is well established, however, that any entry and feeding activities on roots will make the plant more vulnerable to disease.

The **Meloidogyne** are highly specialized parasites. The female larva **must** find a susceptible host in order to develop to the adult stage and to become able to reproduce. It is obligatory that the cells of the plant respond in specific ways to chemical stimulations provided by the feeding nematode; failing to achieve the required response the nematode cannot mature. **M. hapla** larvae are attracted

to an area of growing cells immediately behind a growing root tip. A larva penetrates the tissues and feeds for a time. If the plant is susceptible, the adjacent cells become altered in growth, ultimately forming from two to several giant cells. The female becomes permanently lodged with these cells, eventually developing an extended abdomen as egg development takes place, losing her worm-like shape. The cells and nematode are inter-dependent. If the nematode dies, the cells die. If the cells fail to adequately support the nematode she may die without having attained the ability to reproduce. (Researchers have frequently reported finding plants on which root galls were produced but with neither nematodes nor eggs to be found.) When egg-laying commences, the eggs may be deposited inside the gall or break through to the outside. Larvae hatching from these eggs migrate to appropriate entry sites, if available, and the cycle continues.

Meloidogyne hapla have been found to remain dormant at soil temperatures below 50°F, dead after temperatures of about 18°F for four days and dead after a shorter time at still lower temperatures. In laboratory trials hatching was best at 77°F, migration of the larvae best at 68°F, penetration best at 59° to 68°F and development best at 68° to 77°F. This shows that in the garden southern exposures and/or longer growing seasons will be more favorable to the build-up of large numbers of nematodes, owing to a longer period of warm temperatures. It is also seen that the temperature range of best penetration is well-suited to the heavy invasion of peony roots during early autumn when abundant initiation of new roots occurs. Even if the nematodes are later killed by cold temperatures, the roots will already have been damaged.

Meloidogyne are found in the soil close to roots and may be active at all depths in the root zone of the host plant where their general requirements of temperature, aeration and moisture are also met. The nematodes require moisture to be active but must also have good aeration and do not survive prolonged flooding. Veteran peony growers often assert that if one will closely trim affected roots and replant them in heavy soil, this will "take care of" the problem. Perhaps in heavy soil the nematodes range less deeply, thereby making the population as a whole more vulnerable to destruction by winter temperatures.

In moist, sterile soil (without a host) most eggs and larvae of the sub-species **Meloidogyne incognita acrita** died in 12 months or less, sooner at temperatures above 50°F. Whether forms exist that are able to live dormant for very long periods was not found.

High temperatures may kill nematodes at around 115°F or higher for periods of 30 to 60 minutes. However, it appears that different populations or stages of development may require slightly higher temperatures. In a Kansas test, peony roots survived 120°F

for 20- and 40-minute periods, but so did some of the nematodes. The 20-minute treatment gave as good control as did 40 minutes.

The search for generally resistant plants has found resistance to be common among all members of the grass family (*Graminae*). Resistant annual crops include okra and small grains (usually resistant to *M. hapla* and sometimes *M. incognita*). This information may be helpful in planning the use of field space between plantings of peony. In residential plantings, lawn grasses provide an area of resistant plants, though susceptible broad leaf weeds in the lawn might serve as reservoir hosts.

Two plant groups have been found which give off secretions that are poisonous to some nematodes. These are asparagus and marigolds. However, it is known that *Meloidogyne* invade asparagus roots, though they are unable to mature and reproduce. Marigolds were found to depress nearby populations of the parasitic genus *Pratylenchus* but no reports were found showing them to affect populations of *Meloidogyne*.

Natural enemies have been identified but attempts to depress nematode numbers through introducing large quantities of such organisms have not been successful. However, the use of green manure crops prior to planting a susceptible crop has sometimes given promising results. Presumably the introduction of the additional organic matter enhanced populations of some enemy organisms already present. It is perhaps useful to try for a similar effect by adding compost around peony plants early in the growing season, prior to the summer period of nematode increase. There will be a fertility benefit to the plant whether or not it helps nematode enemies.

CONTROL MEASURES

I have so far meant to show what are the signs of root-knot nematode presence and to provide information pertaining to their life requirements. If nematodes are present in a peony planting and are surviving from year-to-year in numbers sufficient to reduce growth and flowering performance, something should be done, for the peonies will surely become most unrewarding.

Perhaps the best news about root-knot is that there is now available a selection of chemicals poisonous to nematodes (nematicides) which may be used as a dip for roots and/or a soil drench around living plants. These nematicides do not provide a cure-all, for it is not possible to know that an effective concentration has penetrated to all critical areas. Penetration is not dependable in undisturbed soil. It is more difficult for the chemical to reach nematodes embedded in root tissues and it is not possible for the operator to know exactly how deeply or widely the root zone extends. Nevertheless, having nematicides for use during the growing season and at

replant time makes possible an enormously more promising prospect than was heretofore available.

CHEMICALS: The following is a listing of some of the nematicides suitable for treatment of living plant material, pre-plant preparation of soil, root dip, planting hole treatment and/or growing season soil drench. These are listed based on knowledge of their use with peonies, but not necessarily upon knowledge of availability or label approval by the U. S. Food and Drug Administration. Contact local sources for additional details.

In most applications these materials work slowly, due to time required to reach the nematodes and penetrate them. Apply soil treatments two weeks or more in advance of the time you wish it to be effective.

DBCP (chemical name), sold as **Nemagon** and other similar trade names. In greenhouse roses, multiple applications were found to depress **Meloidogyne hapla** numbers and resulted in increased yield and quality of cut flowers.

VC-13 Nemacide (trade name), packaged by Mobile. An organic phosphate compound in emulsifiable concentrate, approved for small package sale in retail stores, promoted for use by African violet hobbyists in making up nematode-free potting preparations. Recommendations for larger volume applications were furnished on request. Could be used as root dip (suggest 15 minutes using soil drench solution) or applied through hose-end sprayer with appropriate protection of operator.

DASANIT (DEZ uh nit, trade name), packaged by Chemagro. An organic phosphate, not offered "off-the-shelf" in garden centers, but packaged for farm and other commercial applications. I have it in a granule formulation from Farmland Industries and use a cook's seasoning-shaker for application to small areas. It is also prepared as a liquid concentrate. Cultivate or water following application.

ZINOPHOS (ZIN uh foss, trade name), American Cyanamid, a **dangerous** organic phosphate compound. Emulsifiable concentrate solution when used as a root dip gave consistent control of **Meloidogyne hapla** in University of Missouri-Columbia tests. Inquire with authorities about local availability and restrictions for safe use.

There are possibly other compounds available, but the information does not much appear in general sources, for nematicides are usually classified among the chemicals that are more toxic to humans (than those which are marketed for home use). To locate these materials, it may be necessary to inquire beyond the customary local information sources. Some possibilities are: Research

specialists, pesticide manufacturers' representatives, and/or technical advisers who work with farm and greenhouse producers.

CULTURAL PRACTICES: The practical cost of nematode injury in peonies is poor flowers, or none, due to poor growth. That is also the practical result of any other problems which retard the growth of the plant.

Nematodes are **not** the foremost among problems which retard peonies. The foremost is poor quality of the soil. Those of us who are stuck with a relatively poor soil for gardening (and there has been a great deal of it turned up by the bulldozer in America's residential developments) will not get much satisfaction from the work of applying nematicides unless we also provide well for the other needs of the plants.

What is there to do? First, peony growers should dismiss from their thoughts any notion that there is something basically "wrong" about using soluble or concentrated fertilizers. Peonies are very heavy feeders. If you have soil that is unable to yield up the quantity and kind of nutrients needed, supplementation with soluble fertilizers provides about the only means to make up the deficiency.

What fertilizers to use? We have seen that potash deficiency is made worse in the presence of nematodes. There is also evidence that ammonium sources of nitrogen depress the hatching of nematodes. Phosphate derived from ammoniated superphosphate moves much better with the soil moisture than does phosphate from other common sources. For these reasons, I am in favor of using a mixed fertilizer of a type formulated for crops, which contains ammoniated superphosphate and a high level of potash, such as 8-16-16, 5-20-20 or similar balance. Use it at generous rates if the soil is poor. For specifics, inquire at your county's agricultural extension office.

Secondly, use large quantities of compost. Tons of leaves are bagged and set on the curbs of American streets every fall and disappear with the trash truck. These bags of leaves are a prepackaged source of raw material for making compost and cost no more than to ask for them. In addition to improving the soil condition there is evidence that organic matter is antagonistic to nematodes. However, leaves should best be composted for a year, which does require planning. Wait until spring to apply compost where nematodes are suspected, they should not be allowed added insulation from winter cold.

SANITATION: Another important area of nematode control has to do with prevention of spread to unaffected plants. In small ways and guided by common sense, sanitation deserves perhaps the most diligent attention of any measures one might take in overcoming

the presence of root-knot nematodes. Some practical suggestions are: care in cleaning of shoes and tillage tools when moving between areas of the garden, even changing clothes after working a suspect area before going to areas believed clean; care in removing all root pieces when digging an infested plant; and, careful observation of plants in a previously treated area to determine whether the cleanup was successful.

Perhaps the most critical sanitation measure in nematode control is to carefully dig all roots of any plant which is found infested. Wash roots thoroughly using tub and hose and trim every suspect root well back to unaffected tissue. Destroy the residue. I do the washing in a flat area of lawn grass where the drainage soaks away without draining to plant borders. This area should be periodically treated with a nematicide as a further precaution.

A small nursery area might be used to advantage as a place to grow new additions or "cleaned up" plants for a year, either in beds or containers. Root-knot is easy to identify once you know how it looks. However, you have to dig the plant in order to see the roots. A nursery area provides a place to "proof-up" suspect or unknown plants. Since annual digging of the plants in the nursery is likely, it will then be possible to fumigate the soil, if found desirable, before replanting. Since fumigation involves use of materials which destroy plants, this limits its usefulness to areas where all plants are removed periodically. Fumigation is widely used by greenhouse operators and nurserymen in both indoor and outdoor plant beds. Information is usually available from local sources.

The foregoing has been presented having in mind the perspective of a reasonably ambitious amateur or greater level of interest. It is hoped that this will prove helpful to persons who, like myself, have not previously had a ready source of general information. However, help is available from experts in public programs and such sources should be sought out by growers who suspect they have a nematode problem.

Selected References:

Jenkins, W. R., and D. P. Taylor, **Plant Nematology**, 1967, Reinhold Corp., New York, 270 pp.

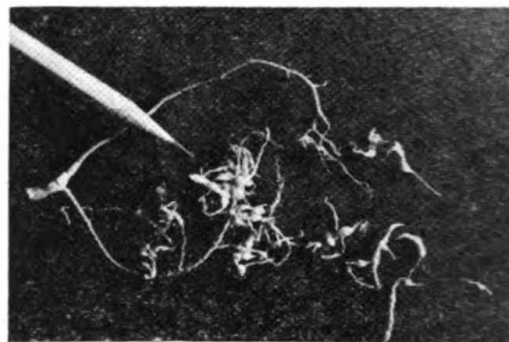
Sasser, J. N. and W. R. Jenkins, Editors, **Nematology: Fundamentals and Recent Advances with Emphasis on Plant Parasitic and Soil Forms**, 1960, The University of North Carolina Press, Chapel Hill, 480 pp.

Palm, E. W. and Dropkin, V. H., "Nematode Disease Problems," no date, mimeographed, Plant Pathology Department, University of Missouri-Columbia.

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Young roots of peony swollen with recent infestation by *MELOIDOGYNE HAPLA*, the northern root-knot nematode, dug December 1973. This nematode is believed to form root galls primarily or only at growing root tips. Unless the distorted tissue is formed the nematode is unable to mature and reproduce. It was not learned whether these nematodes may attempt to paratitize older root tissues.

Figure 1



MELOIDOGYNE infected peony root pieces with older root galls, dug December 1973. Note the clusters of white callus tissue on the largest roots. We know that callus seems to form readily on peony roots stored during autumn. Since these roots were **not** previously disturbed, perhaps the presence of the callus tissue is also a sign that nematodes have been "working" in the area.

Figure 2



Heavily parasitized with root-knot nematode (*MELOIDOGYNE*), this *P. LACTIFLORA* seedling in its 4th year was able to make stems no more than 8 inches tall. It would be useful to learn whether a nematode-free mature plant may be developed from such a specimen by severely pruning away all suspicious root tissue and replanting with treatment at a clean site. However, it should be dug for root examination no later than the following September in order to know whether further treatment is needed.

Figure 4



Herbaceous hybrid peony (lacti/lobata) showing older and moderate amount of root-knot (Meloidogyne), dug December 1973. This plant grew within one foot of heavily parasitized P. LACTIFLORA seedlings, root pieces of which are portrayed in Figures 1, 2, and 4. This lesser infestation suggests that the local population of nematodes is perhaps more attracted to the "lacti" peonies; less efficient at parasitizing the hybrid; and/or that in autumn the hybrid simply does not generate the new root growth suitable for parasitizing.

Figure 5



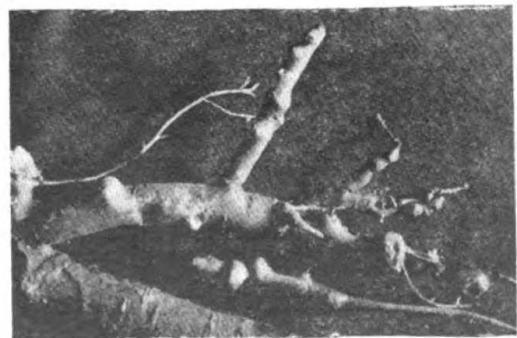
Tree peony roots affected with root-knot (Meloidogyne), dug October 1963. Contrast the long, slender, normal roots with the proliferation of small, heavily parasitized roots. Roots which emerge while the nematodes are dormant due to cold temperatures or not active for other reasons may escape becoming parasitized, in which case normal proportions develop. This young tree peony suffered bud-blight in 1973, though it had flowered in 1972.

Figure 6



Roots of PAEONIA LACTIFLORA showing root lumps or swellings which are not nematode galls. These differ from nematode galls by being generally larger, being surrounded with normal appearing root tissue, and by containing a sizeable distinct area of yellowish material embedded below the root surface. When the diseased plant is divided, and replanted, the condi-

Figure 7



tion appears in the new roots of each new plant. LeMoine's disease has been presumed.

DJR garden columnist John Simkins receives service diploma from Mrs. James Onions, president of the Oakville Horticultural Society.



Mr. Simkins is Vice President of the American Peony Society and is host to the National Convention, which will be in Hamilton, Ontario June 14, 15 and 16th. He is also in charge of the National Exhibition of the American Peony Society, held at the Royal Botanical Gardens.

OHS HONORS DJR COLUMNIST

DJR garden columnist John Simkins was honored at the recent annual meeting of the Oakville Horticultural Society held in the hall of Knox Presbyterian Church.

Simkins was awarded the OHS service diploma which is presented to society members who have given at least 10 years' service to the organization.

“Over the years he has been an active member and made many

contributions to the society," said vice-president Mrs. James Kanaley. "He is a past president, has been on the board of directors many years and has served as chairman of numerous committees. Mr. Simkins' sound knowledge of horticulture coupled with his sense of humor has made him a popular guest speaker with many other organizations."

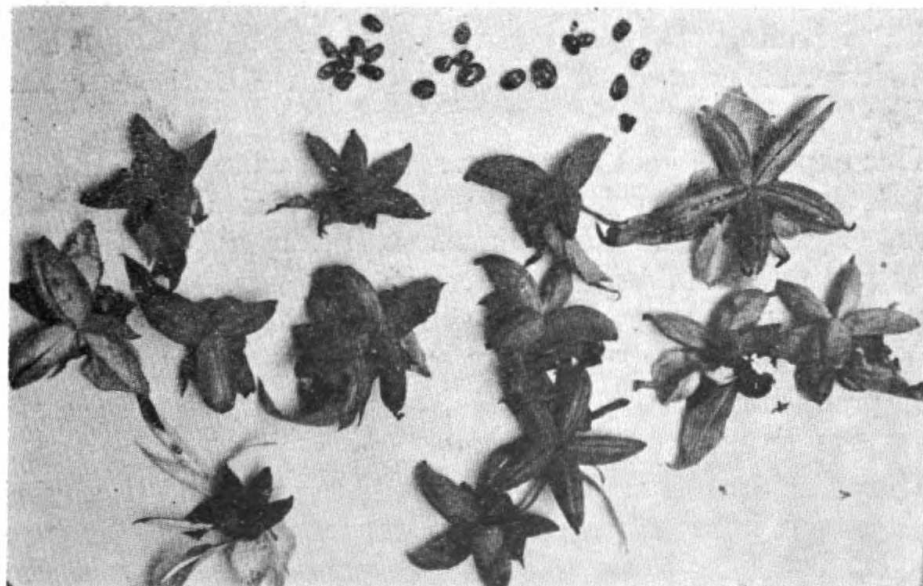
SEEDS AND THE HAPPY TREE PEONY

John E. Simkins

The glory of the tree peony is most evident in late May or early June when the exquisite flowers appear. The bush is enveloped in a cascade of colour. (Here, I exempt Alice Harding and Souvenir de Maxime Cornu, where the flowers are somewhat hidden).

Some growers lose interest after the blooms fade and even cut off the stems and discard them. To the peony, the flower is a means to an end. To most people the flower is the end. There is something sad here, hence this odyssey to the seed.

The seed pods of the peony are not really beautiful but they are majestic, even magnificent.



The miracle shapes of peony pods and seeds.

As the pods develop, they complete the plant. When they open and the shiny brown seeds are displayed, the plant proudly seems to say, "Mission Accomplished."

For those who grow peonies from seed and especially for those who have had a hand in producing the genetic make-up of the seed, there is as great a thrill in a well-filled pod as in the lovely flower.

There is a great difference in the size, shape and number of pods and seeds. Japanese varieties have pods that are almost hori-

zontal. Lutias has a more vertical array. Seed colours go from red to brown to black. Lutia hybrid seeds are huge and the pods with seeds are quite immense. It really is a thrill to find filled pods in lutea hybrids because they come so infrequently.

But what dreams there are in seeds. Because it takes about five years for a tree peony seed to bloom, our dreams can last. They are kept bright as we place the seeds in bags of vermiculite, in a warm spot, then in a cool spot watching all the time for the first bright white root. Some dreams are shattered as the seeds rot. The first shock comes when they appear dull and the vermiculite sticks to them. A squeeze confirms the bad news. The dream is not concentrated on the one or two that remain.

What joy when the roots appear and the seeds are placed in cups of vermiculite in the refrigerator or planted outdoors if there is still time. As we look at the labels and visualize the beauty of the parents, anticipation is overwhelming.

There is a special thrill if a double or triple rooted seed is found. These seeds produce twins or triplets. The plants may have different ploidy than their parents.

There is a section on this phenomena in the June 1972 Paeonia including an article by Fred Cooper and a discussion by Roy Pehrson and Chris Laning. Doubles and triples should be carefully labelled and their seedlings checked for any noticeable differences from the parents.

This experience goes on over most of the winter. In the spring the little leaves appear and the plants are placed in rows in the garden. By this time the blooms are appearing on the garden peonies and maybe in some of the older seedlings.

It's a thrill to walk in the seedling patch to see what is there. Although often an anticlimax, all the experiences of pleasure and pain in producing a new plant have been enjoyed even if the sibling has not the promise of the parents.

The same dreams are present even if the bees did the hybridizing. Here our imagination can run rampant as the seedlings grow. Each year brings us closer to the great moment the flowers appear.

How can you enjoy these pleasures from your peonies? Plant a few seeds. Watch both your herbaceous and tree peony hybrids. Let them set seed if they will; and if you don't want to plant them, send the seeds to me or anyone else who will grow them. I will tag the plants with your name and one day you may see your seedlings. If you think any are worthy of naming and registering, you may select the name and have a piece of the plant.

Have all the fun of growing peonies, collect the seed and have happy fulfilled plants. Maybe they will repay you with an outstanding heir.

THE DUTY TO REGISTER

J. Franklin Styer

Every good flower deserves a historian. And its leading growers usually get together and see that this job gets done. Naturally this endows the organization with authority. When the representatives of the world's horticultural societies first met in 1950 to adopt a code of nomenclature, this principle was built into a most important new program. The International Commission now has designated several societies as International Authorities, each for a genus or special group of horticultural plants.

The work of these Authorities is to keep controlled and complete nomenclatural records. For example, The American Rose Society, upon being appointed, first prepared and published a "base list" of rose cultivars, group names, and proposed rules for receiving and registering new names. This list with its annual increments of new cultivars makes up a complete record of roses in commerce, in scientific collections, and the like.

This listing is scientifically correct as nearly as possible. It follows the presently effective International Code of Rules; for instance no Latin cultivar names are now permitted. No rose is recognized in commerce until registered. Translation of names between different languages is controlled. The rose-growing public thus gains through the greater stability and wider knowledge of rose-growing progress.

It is now proposed that the Peony Society should become the International Authority for Paeonia. It will cost some money, which should be provided from registration fees which should come in from around the world. It will require a devoted, knowledgeable registrar. The first duty of this official will be to establish permanent international contacts, with the aid of the various societies which have already gone through this routine.

The second job, which will take at least three years, is the listing of peonies in commerce in all countries, and in all well-known peony collections. This work should not be as complicated as for roses, lilies, orchids, but needs a lot of re-checking before it becomes a satisfactory base list. In particular, it probably will require a committee of some size to study the groupings to be established and the names for such groups.

In the meantime, peony specialists will become aware of the program and begin the filing of registrations of new cultivars. Lists, accompanied by introducers' descriptions, will be issued at definite intervals, and reprints made for distribution. The Secretary will receive the correspondence, the registrar will rule on the acceptance of each new name and the description and classification. Many introducers do not have copies of the Code, so may make errors; the

registrar's duty will be to aid them on conformity, on name duplications, and the like. A committee will act on matters in which he may be in conflict with any other party. In the various Authorities, there are remarkably few controversies, however.

No responsibility rests on the registry for false or misleading descriptions. This becomes, as is right, the problem of the gardening public. The Society can take note of any such problem if it undertakes evaluation of cultivars; but this is a separate function entirely.

* * * *

"The registration of a new variety is to be done in accordance with the notes for the guidance of International Registration Authorities for Cultivated Plants and the American Association of Nurserymen's 'How to Name a New Plant.'

"By its commitment on nomenclature and plant-name registration, the long-range goal of this office would be to achieve complete national authority for the naming and registration of all new peony varieties and eventually the complete international authority for all peony registration."

The above motion was made by Roy Klehm, President, and unanimously approved at the Board of Directors meeting. June 17, 1973. Bulletin #208.

OUR CHECK LIST NEEDS YOUR HELP

Allen Harper

As indicated in the Minutes of the last Board of Directors Meeting published in the December, 1973 issue of the Bulletin, our President has appointed me to work on a Check List. It was agreed in discussion that this be as comprehensive a list as possible of all the Peony varieties currently commercially available in the United States and Canada.

Our first step in assembling such a list is to ascertain what varieties the various growers are currently offering. Therefore, we are asking each of you who grow any peonies at all for sale to send us lists of your current offerings. Please, if your listings change from year to year, send us two copies each of your 1972, 1973 and 1974 catalogs or lists. We are also sending out this request to all other known growers offering peonies, and repeating the request in as many national gardening publications as will run our request without charging us for advertising.

PLEASE DON'T OVERLOOK THIS REQUEST. Without our own Check List we cannot hope to assemble the data required to apply for the International Registering Authority. If we do get

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this approval, it will be of great benefit to you as a grower and to the membership in general, as it will bring us the complete story of what is going on in all areas of the world where peonies are grown.

NEWSLETTER — PAEONIA

Published by The Lanings

Edited by Bill Seidl

JUNE, VOL. 4, NO. 2. Chris Laning reviews the book "Create New Flowers and Plants," by John James, the reading of which inspired him to get involved with hybridizing. He chose to work with peonies.

C. Graham Jones writes of a hotel-sponsored gardeners' tour of the Devon-Cornwall area (England) on which he kept a lookout for moutans. Few were found and those were of 19th century and earlier vintage. In one garden a plant with foliage brightly colored was labeled "P. SHEREFFIAO;" on another estate a very old plant had a central stem about four inches in diameter and the surrounding branches drooping umbrella fashion. It did produce seed—an attendant said.

In a letter to Chris, Bill Seidl expresses his pleasure at receiving seed forwarded by Chris from Dr. Henry Tod, Scotland. The seed is from plants (one with yellow flowers, the other maroon splashed with yellow) of tree peony type and, supposedly, of a cross between P. MLOKO. and P. DELAVAYII. Received in late March, about ten seeds were rooting by late April. Problems were foreseen in adjusting the growth cycle to a normal seasonal cycle. Bill also (1) advances a mutation theory for explaining the success of Mr. Itoh and Mr. Pehrson in their LACTI x LUTEA HUBRID crosses, (2) observes that his Itoh hybrids are clumping well but have not, as yet, set seed or produced pollen, and (3) praised a fertile Saunders seedling, 16350-F2, light pink, that came semi-double in 1972 after appearing single for several prior seasons.

Several other "Paeonites" briefly describe their beginning interest and efforts in hybridizing. H. E. Briscoe expresses interest in breeding for white and yellow herbaceous hybrids; Jackie Janson, the Itoh Cross and advanced generation lutea hybrids; David Hochstein and Jeanette Dunlop, herbaceous hybrids. Don Jenkins describes his failures, to date, in propagating tree peonies from cuttings.

SEPTEMBER, VOL. 4, NO. 3. Roy Pehrson tells of his success in controlling weeds with the pre-emergence herbicide Dacthal (granular formation) and of his rather mediocre success in controlling "leaf spot" with Benlate in a very limited test. Better control is suspected with earlier treatment.

The value of the LOBATA varieties for breeding truer reds,

warmer pinks, and yellows is analyzed by Roy. He points out that paper chromatography tests by Fred Cooper indicate that a yellow dye is present in the petals of species lobata plants. And, although the Perry clone used by Dr. Saunders appears to be forever lost, other lobatas available are believed to be equally as good.

Self-incompatibility, a condition likely to occur only in pure species plants, is discussed by Roy; he warns readers that this condition is not to be confused with sterility. In connection with this, Roy mentions that his plant of P. MLOKO, although rarely producing a self-set seed, did produce 29 seeds when pollinated by a "pink" mloko from Silvia Saunders.

At the insistence of Chris, Roy gives a progress report on his Itoh hybrids. He still has about 60 seedlings surviving and believes two will certainly bloom in 1974 and probably a few others. The two appear quite herbaceous in habit; many of the others seem to lean toward the tree peony pattern. From the 1972 Itoh crosses, one to ten true hybrids resulted; the only sure one is derived from pollen of REGENT sent to him by Mrs. George Howard, Maryland.

Two of his herbaceous hybrid seedlings are described by Roy. One, from MIKADO x GOOD CHEER, appears to be a smaller brighter-colored RED CHARM with better foliage and a heavy stiff stem. The other, from TOKIO x NATHALIE, is a pink jap with the most attractive foliage in the garden except for ECLIPSE; it also sets seeds.

Most of us in the cold north know that the lutea hybrid tree peonies will sprout and bloom from underground buds if the above-ground stems winterkill . . . as they usually do without some protection. Roy relates how he overwintered (1972-73) these above-ground stems by encasing them in soil. He also reports that Mr. Ivan Kivell of Greene, Iowa, similarly protected a 4 to 5-inch stem of an Itoh hybrid; the terminal bud survived the winter and bloomed! These original Itoh's are usually considered to be more herbaceous in habit than woody.

From an unidentified garden magazine an article is reprinted concerning P. MLOKOSEWITCHII. The author's plant had pale yellow flowers and grew well in sandy soil. Especially appreciated were the decorative opening seed pods—glossy purplish-black seeds contrasting with the startling vermilion color of the infertile seeds. Since his (her?) own plant produced few seeds (self-incompatibility again), the author secured MLOKO seed from other sources. The resulting seedlings, although similar in foliage to his own MLOKO, produced flowers of white and cream, some flushed crimson or margined in pink. He therefore wonders if some of the MLOKO plants in cultivation are not the real thing but hybrids instead.

Don Jenkins, in a letter to Leo Armatys (Dec. 1971), says too

little knowledge of tree peonies is available and too little known about their propagation from cuttings. He suggests ways by which improvement in these two areas could be accomplished—compilation of questionnaires sent to knowledgeable growers and research by an experimental research station that has access to a dependable and varied source of cuttings.

Chris describes his “intensive care unit”—a plastic-enclosed A-frame with bottom heat—that he uses for starting tree peony seeds and caring for his “twins,” two plants produced from a single seed. He and Roy discuss the possibility of the weaker plant in each pair being a monoploid and the breeding value of such a plant. Probably not of any real value to us amateur hybridizers, opines Roy, although a genetecist might regard it quite highly.

BENLATE ORNAMENTALS

Submitted by J. F. Styer

The present law requires all insecticides, fungicides and herbicides to be approved officially for specific crops and so marked on the label. It is unlawful to sell them for use on any other crop.

The following AGRICULTURAL BULLETIN on DUPONTS BENLATE shows approval for peonies under the general heading of ORNAMENTALS.

BENLATE BENOMYL FUNGICIDE FOR CONTROL OF CERTAIN DISEASES OF ORNAMENTALS

Du Pont “Benlate” Benomyl Fungicide is recommended as a foliar spray for control of many foliar diseases and as a plant drench for the control of certain stem, crown and root disease of ornamental plants.

HOW TO USE

Foliar Spray

Except as noted, begin applications when disease first appears. Apply $\frac{1}{2}$ lb. per 100 gals. of water (1 tablespoonsful per 2 gals.) for the control of powdery mildew and *Botrytis* Gray Mold. Use 1 lb. per 100 gals. (1 tablespoonful per gal.) to control Anthracnose (begin applications at bud break); *Cercospora*, *Entomosporium*, *Ramularia* and *Septoria* leafspots; *Ascochyta* and *Phomopsis* blights. The higher rate also controls Black Spot of roses, *Didymelina* leafspot of iris, *Corynespora* leafspot of *Ligustrum*, *Ovulinia*, and *Sclerotinia* blight of azalea and rhododendron (make application at flower opening), and scab of pyracantha and flowering crab. Use sufficient spray to thoroughly wet foliage. For aerial application, use $\frac{1}{2}$ to 1 lb. in 20 gals. of water per acre. Repeat applications at 10- to 14-day intervals throughout growing season; use shorter interval during humid, rainy weather.

Addition of a surfactant to the spray mixture enhances curative action of the fungicide and improves distribution of the spray on hard-to-wet plants such as roses.

Plat Drench

Apply a suspension of 1 lb./100 gals. (1 tablespoonful per gal.) as a drench or heavy spray to plants after transplanting into propagation beds or containers, utilizing porous growing medium. Use 1 to 2 pints per square foot of bed or container surface for control of stem, crown and root rots caused by *Rhizoctonia*, *Fusarium*, *Sclerotinia* or *Botrytis* on herbaceous annuals, perennials and bedding plants. Use the same rate for the control of *Cylindrocladium* and *Thielaviopsis* rots on woody ornamentals such as azaleas, rhododendrons, conifers and poinsettias. Repeat application at 2 to 4 week intervals during disease pressure periods.

As an optional treatment, plants or cuttings may be dipped for 10 to 15 minutes in a suspension of 1 lb. per 100 gals. (1 tablespoonful per gal.) prior to transplanting and subsequent drench treatments.

Note: "Benlate" does not control *Pythium* or *Phyophthora*. For control of these diseases, consult your local Agricultural Extension Service for recommendations. Do not contaminate water by cleaning of equipment, or disposal of wastes.

This bulletin contains new or supplemental directions for use of this product which may not appear on package label. Follow the instructions carefully.

IMPORTANT

BEFORE USING "BENLATE," READ AND CAREFULLY OBSERVE THE CAUTIONARY STATEMENTS AND ALL OTHER INFORMATION APPEARING ON THE PRODUCT LABEL.

TREE PEONY TOPICS

Louis Smirnow

As an aside from the usual peony matters, we list Chromosome counts of species as well as some hybrids.

Species	Count	Species	Count
Anomala var. Intermedia	- 10	Clusii	- 10
Arietina	- 20	Coriacea	- 20
Bakeri	- 20	Daurica	- 10
Broteri	- 10	Delavayi	- 10
Brownii	- 10	Emodi	- 10
Cambessedessi	- 10	Emodi var. Glabrata	- 10

Species				Species			
			Count				Count
Japonica	-	-	10	Rhodia	-	-	10
Lactiflora	-	-	10	Russi var. Reverchoni	-	-	20
Lutea	-	-	10	Russi var. Leiocarpa	-	-	20
Mascula	-	-	20	Smouthii	-	-	10
Mlokosewichi	-	-	10	Suffruticosa	-	-	10
Mollis	-	-	20	Suffruticosa Rocks Variety	-	-	10
Obovata var. Willmottiae	-	-	20	Tenuifolia	-	-	10
Obovata var. Alba	-	-	20	Veitchii	-	-	10
Officinalis	-	-	20	Veitchii var. Woodwardii	-	-	10
Peregrina	-	-	20	Wittmanniana var. Nudicarpa	-	-	20
Potanini var. Alba	-	-	10	Wittmanniana	-	-	20
Potanini var. Troilliodes	-	-	10				

Chromosome Counts of some Hybrids (from Saunders list)

Audrey	-	-	15	No. 4992	-	-	10
Chalice	-	-	15	Garden Peace	-	-	20
Anthem	-	-	20	Reuiem	-	-	20
Archangel	-	-	20	Moonrise	-	-	20
Fantasia	-	-	20	Elizabeth Cahn	-	-	15
May Lilac	-	-	20	Magnolia Flower	-	-	30
Camellia	-	-	15	Roselette	-	-	15
Halcyon	-	-	10	Roselette's Child	-	-	20
Pageant	-	-	20	Roselette's Grandchild	-	-	20
Sprite	-	-	15	Rose Noble	-	-	15
Rushlight 16344	-	-	15	Starlight	-	-	15
Rushlight (F ²)	-	-	20	Winged Victory	-	-	15
Rose Crystal	-	-	20	Claire de Lune	-	-	10
Serenade	-	-	20	Prairie Moon	-	-	15
Winterthur	-	-	20	Oriental Gold	-	-	10

We were fortunate to see some peonies which were propagated by layering. This is an unusual method of propagation, but it has been done and is worth trying.

With the continued shortage of named varieties in Japan, Europe and this country, tree peony fanciers and growers would do well to propagate their own, the most successful method being grafting.

Was recently shown a letter received from a dealer in Japan, stating that a number of the Itoh-Smirnow hybrids have been obtained from the Itoh family. Two of these Japanese dealers have grouped the four varieties and are offering them for sale as one variety, under the name of Oriental Gold, at enormous prices. This will create confusion with Oriental Gold offered in this country, which is believed by most of us, as a species.

It was twenty-six years ago when the American Peony Society had the pleasure of exhibiting peonies in Canada. The International Exhibition was held at Guelph, Ontario. Memories of this wonderful peony show remains.

Our President said, in his opening remarks at the banquet: "We have come to Canada to glorify the peony and set it up on a pedestal for all to see and admire, one of Nature's most beautiful creations—yes, one of God's gifts of beauty, to mankind."

The Court of Honor had six of the most perfect specimens of their type and color, I had ever seen. They were all set up on individual pedestals. As I was examining them after the judging was over, a lady came to me and said: "How do you select prize winning specimens? What criteria do you use?" The following is an attempt to answer those questions.

Marvin C. Karrels

BEAUTY ON A PEDESTAL

By Marvin C. Karrels, Milwaukee, Wisconsin

In my discussion of Exhibition Peonies in this article I will deal with but one aspect of a peony plant — the flower. I will disregard all other characteristics. Whether they have bad stems, are hard openers, poor growers, have weak plants or shy bloomers will be completely disregarded. Only one thing counts — they must produce a flower of extraordinary beauty. Exhibition peonies are unique in this respect. Can they win the nod of the judges on a show table is all that matters. However I don't want to be misleading. Exhibition Peonies are not necessarily deficient in virtues and qualities that go to make up an all-around good peony. As an example—Mrs. F. D. Roosevelt is a fine exhibition peony and also a good all around variety. In fact a peony plant, in order to produce that big massive beauty, must have a strong plant underneath it.

When I speak of exhibition peonies, I mean those peony varieties that have the inherent ability to produce a flower of sufficient beauty to win the blue ribbons on a show table. This definition covers a lot of ground, or should I say a lot of peonies. The records of our National shows would then indicate that many varieties are exhibition varieties. I want to be more selective than this. Show records are sometimes misleading because blooming seasons and show dates are often not compatible and other conditions produce show table winners that I do not always consider as good exhibition peonies. For example—several years ago in one of our National shows, Marietta Sisson won as best flower in the show. It happened to be in the best condition of all candidates under consideration. Marietta Sisson is a good peony in many respects, but I do not consider it an exhibition peony.

Now the question arises just what constitutes an exhibition

peony? In order to recognize an exhibition peony it is necessary that we have a preconceived idea of what the points of appraisal of beauty in an exhibition peony bloom are. The following interpretations and points of appraisal are my own, but I think will, in the main, agree with other opinions also. Before going into any analysis, one rule takes precedence over all others—good condition. That means no spotting, no wilting, it must neither be passed its prime nor its development still too much in the bud stage. We cannot predict its future or recall its past. This rule is sometimes relaxed because of a number of reasons such as bad climatic conditions at cutting time, too late or too early show dates for the cutting season, etc., the end result being too many peonies not in good condition. Relaxation of this rule is usually done by prejudging agreement among the judges. I think it occurs but rarely in our National Shows.

Now to get on with my concept of what constitutes exhibition quality or beauty in show table peonies. I shall begin with the full doubles. At the top of my points of appraisal I place—Perfection of Form. To me this is by far the most important fact to consider, especially so in the full doubles. To me the acme or ultimate of this perfection of form is best personified by the true rose type wherein the petals are of uniform length symmetrically arranged with the edges recurved, holding a fine rose bud center. There will be variations of this but always presenting symmetry of pattern. To me this form of the double peony represents the pinnacle of perfection and a perfect specimen of it is unbeatable for best flower in the show award. I am of the school who feel that only in the full double has nature reached its ultimate goal of fulfillment—a finished flower. However, I feel that a perfect specimen of the rose form of the double peony is the most beautiful, I would not hesitate to place above it, in show competition, a perfect example of say a bomb (before it shows any sign of breaking up), for example Frankie Curtis, Snow Mountain or Mons. Jules Elie, providing that the rose form is not a perfect specimen. The same holds true for the other forms of the double peony such as informal—Kelways Glorious, or the crown form—Blush Queen, Florence Nicholls. The determining factor is perfection of form. I do not mean to infer here that only the full rose type should be placed on exhibition. The A.P.S. recognizes the bomb and crown or conical types as subdivisions of the doubles, and I would not hesitate to show them, provided they are in good condition and of good form. That means the bomb must be firm, fully incurved with no sign of a break down. There should be no sign of abortive petals in the collar. The guards should be flaring with no relaxation or drooping. In the crown or conical type weaknesses usually show up in the collar. There must be no separation here. The crown or cone should be built up uniformly. To win with either of these types, they must be in their prime at time

of judging. There are several other factors to consider in determining what constitutes an exhibition peony. Probably the next most important is—Size. Size is impressive and as exhibition peonies are shown to impress, the importance of size is self evident. However, size in itself is meaningless if it is attained at the sacrifice of good form. A large perfectly formed peony should always win over a smaller peony unless the smaller peony has better form.

Another factor that has some bearing upon what constitutes an exhibition peony is—Color. Color is an elusive factor, often dependent upon personal prejudices. However, I think I am safe in saying that color as found in Mrs. Livingston Farrand, Alice Harding, Solange, Geo. W. Peyton, Florence Nicholls in the lactiflora's in good color or the pink and lemon glow we often find in the near whites is also fine color quality and of course the fine red we find in the hybrids such as Carina, Red Red Rose, Red Charm, etc. or exotic pinks such as Laura Magnuson, Lovely Rose, Hope, etc. I don't think I would want to pin myself down as to what is the best of all. It is often said that the finest color to be found in the lactifloras is Mrs. Livingston Farrand or that the finest red to be found is the color of Carina. I would prefer to describe good color by enumerating detractions from good color such as pronounced magenta tones in the pinks and reds or the muddy dark tones in the reds or the washed out appearance in some of the near whites. I also dislike insipid pale lilac tints. This factor of color applies to all the various types of peonies. Before leaving this matter of color, you might say, what about the whites which technically have no color at all? A pure white is just that, no blemishes, no blotches, just clean white. There are not many, but I think Miss America and Isani Gidui are good examples. Nearly all whites have a tint of some kind, nonetheless beautiful for it, however.

There is another factor that some consider should be taken into account. It is fragrance. While I consider this a highly desired attribute of a peony, I don't think it should bear too much weight in an exhibition flower. It might be considered in favor of the fragrant peony if all other factors are even between two candidates. The degrees and quality of fragrance vary considerably and often two judges do not smell the same degree or quality of this fragrance.

There are a few other factors, which I have heard some judges talk about, that I feel are somewhat on the border of intangibles. They are class, charm, coarseness, refinement. Of these four, coarseness and refinement are capable of description by words. Class and charm are probably something you have to feel. It probably is necessary that you be an aesthete to experience this sensation. I think that all peony lovers are aesthetic, but let's not clutter up the rules with a lot of intangibles. Here is a try at refinement—a delicacy of petal formation, a combination of good color and fine form.

Coarseness—ungainly petal formation, a thickness of petal formation. This matter of refinement and coarseness takes some careful discernment and considerable experience with peony flowers to recognize.

Now, of course, peony exhibitions are not confined to full doubles. All our shows provide classes for the singles, Japs, semi-doubles and the hybrids. Although my own choice and preference as the most beautiful of all our peony types are the full doubles, I would not think of entering a peony show without some of each of these other types. In fact, I would not have a peony garden of only full doubles. There are those who think any one of these other types is superior in beauty. I have no quarrel with those who think so and would stand mutely by and listen to one who tried to make out a case for his favorite type. I love all our peony types.

Now to get on with what I think constitutes exhibition quality in the singles, Japs, semi-doubles and hybrids.

In the singles, the same points of appraisal (1. Perfection of form, 2. Size, 3. Color) apply as well and in the same sequence. My own concept of good form in a single is this: The guards should be large and well rounded with a partially cupped form, of uniform length. The cupped form must not be too rigid or too pronounced so that it gives the appearance of a tulip, rather the guards should be flaring with the edges incurved. It should be open to show the beauty of its face. A relaxation of any one of the guard petals causing it to droop is a detraction from good form. I prefer a small center cushion of stamens and anthers. This however is not a must, just so long as the cushion is rigid and crisp. Once the anthers begin to dehisce and mess up the surrounding guards with pollen and the stamens begin to break down, good form has been jeopardized.

In the Japs I look for much the same characteristics as in the singles. A flaring form of the guards, a crisp and rigid center cushion not too much cupped but still a slightly incurved form of guards. In the Japs the center cushion is of greater importance. One of the most serious faults is "feathering" or tufting of the center cushion. This will vary from just a tuft or two to a great many. It will vary from bloom to bloom on a plant, and it will vary from year to year depending upon the growing season. Some varieties of Japs never feather. Now unless every bloom on a plant feathers every year, the variety should not be ruled out as an exhibition flower. Just as long as you can cut some "featherless" blooms. The center cushion will also vary from thread-like stamens to thickened petalodes.

I prefer the thread-like stamens, but I think it is mostly a matter of personal preference and should not have much bearing on its exhibition quality. I prefer to see the center cushion rigid. How-

ever some varieties will have a great profusion of staminodes giving a rather tousled appearance. If this is natural for the variety and no break down has taken place, I do not think it has ruled out good form. The center cushion will also vary in color with shades of yellow predominating. Some varieties will have self-colored staminodes edged with gold or pink. I feel this contrasting color edging adds to the color value, but should not bear too much weight in the judging.

Another type for which we usually provide separate classes in our shows is the semi-double. There are those who feel that among this group we find some of our most beautiful and charming peonies. They are a controversial type however because of the great variation in the bloom. Some varieties have a full center of stamens, and in others the stamens are intermixed among the petals, sometimes plainly visible and other times almost completely hidden. This variation is found on the same plant from bloom to bloom and also from year to year. The class rule is that to be considered a semi-double, the stamens must be plainly visible. Therefore an A. J. Perry or an Elizabeth Huntington will be found entered one year among the semi-doubles and the next year in the full doubles. I have even found them entered in both classes the same year in the same show and not much can be done about it because in one bloom the stamens are plainly visible and in the other they are completely hidden. There are some varieties that are constant and true to the type. As examples, Rare China, Minnie Shaylor, Silvia Saunders and Rose of Tralee. It would be most difficult to set up a set of points of appraisal for each variant in the type so it is probably best and sufficient to say that a combination of the points of appraisal as set forth above would cover it.

Up to now I have tried to convey to you my concept of what points of appraisal to look for in an exhibition peony bloom in our various peony types. Before leaving and concluding the topic of Exhibition Peonies I think it most appropriate that I mention those varieties that in my experience, both as an exhibitor and an observer of more than 30 national peony shows are the supreme exhibitionists.

When Le Cygne is right it is almost unbeatable and still the champ in my book. However it is getting a little more crowded near the top now. Dinner Plate has the inherent beauty and quality to beat it. A new comer—Ann Cousins—has such sheer perfection of form that when “right” will win almost any given show day. Mothers Choice—also of the new crop of challengers has the latent ability to deliver a knockout punch to the champ. Hansina Brand, a perennial challenger, wrested the crown innumerable times. Frances Maines, just up from the prelims, packs a wallop in both

form and refinement. Nick Shaylor has met the champ and come out the winner, on several occasions. There is a strong boy up Minneapolis way, named Paul Bunyan, who, if managed properly, could be a sensation. From that same stable in Minneapolis comes Ramona Lins and Dolorodell, two polished and finished performers who can give a good account of themselves anytime they are on display. Douglas Brand is a dark horse that is capable of producing an upset. It has the finest form of any red I have ever seen, with the possible exception of Paul M. Wild. Elsa Sass is an old Pro who fights off the young contenders with more than ordinary success. In fact this one has been playing the role of a trial horse and any ambitious youngster that can beat it, is ready for the big time. For sheer color and a crowd pleaser who can beat Mrs. Livingston Far rand. Solange has color and finesse but is a little small for the heavyweight division. Blanche King remains pre-eminent in its color class. However, two new challengers have made their appearance in our recent shows, Gibraltar and Princess Margaret.

From down Topeka-way comes the Mid-Western Champ—Kansas. It is a seasoned veteran now and still hard to beat for form. What red can give this one the competition it needs? Here are some high touted challengers: Douglas Brand, Valencia, Noel, Irwin Altman, Paul M. Wild and of course the old veteran Philippe Rivoire when it comes in with some weight (size). I have a letter from a highly partisan fan in Minneapolis who maintains Douglas Brand can knock off Kansas any time it can get it into the same ring. That little melee, I would like to see myself. The other color classes are also getting crowded with high stepping challengers, any one of which can end up in that coveted spot—the Court of Honor. For instance how would you like to see a show table filled with these top-notch whites in prime condition and in the perfection of form all are capable of: LeCygne, Mothers Choice, Ann Cousins, Elsa Sass, Victory, Nancy Nicholls, Dr. J. H. Neeley, Mary E. Nicholls, Moon-glow, Madylone. This last one hasn't made its appearance in the big time as yet, but watch for it when our good exhibitors get hold of it. It has all the qualities to be a sensation. Here are my nominations in the flesh and light pink class for Peonydom's "Emmie" award. Dinnerplate, Moonstone, Dorothy J., Annisquam, Doris Cooper, Nick Shaylor, Frances Mains, Florence Nicholls, Norma Volz, Madylone, Laura Treman, Marilla Beauty, Minuet, Gardenia. What a peony exhibitor's dream to see that lot all in one place at the same time.

In the medium and dark pink classes, any one of these could win an "Oscar" in any show: Dolorodell, Mrs. F. D. Roosevelt, Mandaleen, Paul Bunyan, Ella Lewis, Blanche King, Emma Klehm, Vivid Rose, Gibraltar, Princess Margaret. This last one received the blue rosette as best in its color class, three years in succession

and once as best in the show. It has everything—form, color and size.

The semi doubles are the light heavyweights of the show ring. A number of them show up in the full double classes and can win there, too. Here are a few that can be shown as a true semi-double: Miss America, Ave Maria, Rare China, Flamingo, Minnie Shaylor, Red Goddess, Matilda Lewis. Of this lot, Miss America stands head and shoulders over the rest. However, Liebschen has met Miss America twice in the Court of Honor and beat her each time. Rose of Tralee is also beginning to show up with blue ribbons.

Let's call the Japs the middleweights of the peony show. They are a versatile lot. A great many of them possess exhibition quality. These are my favorites: Tamate Boku (this is probably the greatest exhibition Jap of them all), Westerner, Isani-Gidui, Nippon Beauty, Bute, Rashoomon, Largo, Lotus Queen and White Gold all have what it takes.

The singles should be classed as the lightweights. In this group, one stands out as a guide by which all other single exhibition peonies are measured, it is — Sea Shell. Others that seem destined to equal it, are Pico, Krinkled White, President Lincoln, Cygnet, Arcturus Spellbinder, also has the inherent quality to win. Spellbinder has the quality and size to win, as best in the show.

A group that I have said very little about are the hybrids. They are comparatively new comers to our peony shows. In fact it is only in the last ten or fifteen years that classes have been provided for them. Their claim to recognition has been primarily one factor—color. They have brought to our shows a clarity and brilliance of red color not found in the lactifloras. Also, they have been giving us “color Breaks” heretofore not found in the lactiflora color spectrum. In evaluating points of appraisal for hybrids, I feel that color value should most probably be the prime consideration, and form and size be considered as secondary factors. When the hybridizer give us some fine rose formed doubles in the hybrids, perfection of form will then also take precedence. However, the ideal even here is the combination of all three, form, color and size. The outstanding exhibitionist to date in this group has been Red Charm. It has color, size and fine form for a bomb. In most varieties I have considered a bomb type as coarse, especially so when the bomb breaks up. However, in defense of Red Charm, I want to point out that its bomb is refined in that the tips of the incurved bomb petals are pointed or tipped with needle-like points. The pointed tips are more pronounced in other red hybrid bombs and are often referred to, as jappy bombs. In any event, Red Charm is the “Red Bomber” of the hybrid class. It is the champ, having won its title more often than any other hybrid. However, the first good full rose type hybrid that comes along will displace Red Charm. I don't think we

have it yet, at least I have not seen it. I have one or two in my garden that give promise, but they will have to get some age first and prove themselves. I refer to a pretty good full rose formed double called Edgar Jessup. Heritage also gives promise, as it too produces some full rose formed flowers on its plant. I think the color of Edgar Jessup is a shade better, however. I consider Carina as having the finest red color of any peony, hybrid or not. It is a single to semi double. Prairie Moon is one of the finest of the newer cream to lemon colored singles. It has the quality and class to be a winner. Paula Fay—a brilliant deeper pink, semi-double has the color and form to be a sure Court of Honor contender.

Only in the hybrids will you find a single winning readily over a double or semi-double. Alexander Wollcott also has what it takes to win. It's a semi-double with extra fine form. In pink, Laura Magnuson, Cytherea, Cecilia, Ludovica, Great Lady, have the color value and good form to make them real contenders in the hybrid class. When Cousins' "Inner Glow" hybrids make their appearance, in our shows, their effect will be devastating upon this class.

It is the hybrids that are producing most of the excitement in our peony shows today. They are exciting, exotic and ethereal in their beauty and they are early in their blooming season, giving an exhibitor a chance to exhibit in a show that otherwise would be too early for the later blooming lactifloras.

Yes, a peony show is a lure well nigh irresistible to those who love fine peonies. I can understand what motivated a man to cross the ocean from England to see an American Peony Show.

PEONY ROOT AUCTION

John E. Simkins

The auction of peony roots was extended to peony books, peony seeds and original Japanese paintings of peonies, last year in Milwaukee, Wisconsin. This year it will include a painted peony plate.

In the few auctions I have attended it seems that most of the donations have come from commercial growers and a few members. Most of these donors also commit considerable time to the affairs of the Society.

While one might expect some element of mutual gain for commercial growers to help the society, it is a minor consideration in their generous help. I believe the general membership could be of much more assistance here with the expenditure of a little money and time.

All that is required is to write Greta and offer roots, peony seeds or any other peony memorabilia. After the auction, she will tell you who purchased your donation. If it is a peony root, dig up a plant in the fall, cut off a division, and mail it to the purchaser.

This will not hurt your plant. It will assist the Society to operate successfully in these uncertain times of rising costs.

Your gift of something more prized than money will make your membership more meaningful for you and make your Society stronger to serve you and the peony. You will also have someone with which to compare notes on the growth of your plant over the years. If it is a rare plant and some unforeseen problem occurs, you will have a chance of getting a division back later on.

The community of peony lovers will be stronger by your action and your pleasure increased by the knowledge that your garden favorites are bringing beauty and pleasure to others in the group.

Give this favorable consideration and drop a line to Greta today. The address is: Greta M. Kessenich, 250 Interlachen Road, Hopkins, Minnesota 55343.

MY EXPERIENCE WITH PEONIES

Z. R. Prentiss, Akron, Ohio

Mr. Prentiss planted some 400 peonies at Stan Hywet in Akron, Ohio. The roots came from the farm of Mr. Krekler.

Many plants are particular about the type of soil in which they are planted. Some require sandy soil, some rich loam and some require complete drainage. Peonies are not as particular as some weeds, in my garden.

At my home, I planted them in hard yellow clay. They not only grew, but bloomed profusely the second year after planting. At Stan Hywet, the soil is very fertile in plant nutrients supplied by many years of decaying plant material. A double handful of bone meal was worked into the soil where each peony was planted. Some of the plants attained heights of five feet.

In the four hundred peonies planted there, you'll see Japanese, hybrids, and the regulars that have been around for many generations. Singles, doubles, tenuifolia and about all the colors found in peonies. No tree peonies were planted at that time, but there are tree peonies that were planted, perhaps sixty years ago and are blooming very nicely.

Tracing geneology of peonies could be quite a lengthy undertaking, suffice to say that the peony is a native of China. (*Lactiflora*) then became transposed to Japan, so now we know certain characteristics as "Japanese." The *tenuifolia* adds a very desirable factor. The ferny leaves are very attractive. Most of us give the Japanese credit for giving us peonies with the center a different color than the balance of the flower.

No one can deny that many of these flowers are very beautiful. As an example, "Velma Atkinson" with deep pink petals and bright

yellow staminodes or "Claire De Lune" with petals of yellow staminodes giving the effect of orange.

Peonies do not like shade. In fact they will gradually give up the ghost and die, if planted in too much shade.

Because of the fleshy roots growing near the surface of the surface of the soil, cultivation near the plant can do severe damage. soil, cultivation near the plant can do severe damage.

To combat weeds and hold moisture, I like shredded sugar cane applied at least four inches thick. Added advantage: as the cane decays, it adds fertility to the soil. Clean straw or leaves are good if applied thick enough. There are other forms of mulch, if you have it available.

Add to your garden enjoyment by collecting and planting a few seeds of your favorite plants. It will take from three to six years for blooms to appear, but anticipation of something new is great fun.

Like anything worthwhile, growing peony seedlings requires some effort. For the first couple of years, the little seedlings must have shade provided for them. They cannot survive under the hot summer sun. A sunshade made with lattice slats is good. These seedlings should be transplanted after the first two years. They will amply repay for the care given them.

As we look forward to the present National Exhibition in 1974, anticipating peonies of great beauty, grown to perfection, new varieties, seedlings yet to be introduced, hybrids of vibrant colors and the tree peony, so exotic, let us turn back the pages of time and read about another show that excited all peony lovers in the year of 1924.

As written by Mr. Ben Kerns, Topeka, Kansas

Submitted by R. W. Tischler, Brand Peony Farms, Faribault, Minn.

Joy reigned supreme in the heart and anticipation in the mind of every enthusiastic grower of fine peonies—whether amateur or professional—in 1925 as peony lovers began to look forward to local and national shows during the ensuing years, since that was the year in which Mr. Brand first offered for commercial sales, thirteen new introductions, which of course followed many other introductions of superlatively fine peonies in former years. These thirteen varieties were as follows:

Myrtle Gentry	Mrs. Frank Beach	Laverne Christman
Hansina Brand	Mrs. F. A. Goodrich	Mrs. John M. Kleitsch
Ella Christensen	Hazel Kinney	Mrs. Harriet Gentry
Blanche King	Mrs. Romaine B. Ware	
Mrs. A. M. Brand	Victory Chateau Thierry	

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I had my first privilege of viewing these magnificent new peonies at the 1924 National Peony Show at Des Moines, Iowa, where they were enthusiastically viewed by all, who needed but one look to perceive the great contribution Mr. Brand had there made in the introduction of these new peonies, every one of which doubtless would take its place in the garden and at the show to delight and captivate the admiring eyes of enthusiasts by its great size, beauty of form, or perhaps its pleasing fragrance, or unusual and dissimilar color. Dissimilarity is a desired mark of merit in the introduction of any new flower, and we truly had it in some of these exquisite new peonies.

At the time of introduction, these 13 varieties were offered to professional growers at \$50.00 per root with no discount. That meant that the total of the 13 cost \$650.00, and, at the time I purchased all 13, I remember that, for a few dollars more than I paid for the 13, I could have purchased a then new Ford car.

Again, these 13 new varieties could then be purchased only under written contract, two stipulations of which were:

1st: No division or divisions from such plant could be sold for a sum less than \$50.00 until after the expiration of a four year period.

2nd: None could be exchanged for other stock or traded or given away during that four-year period.

And, speedy as is time in its flight, it has been pleasing to observe that the highest expectations one held for these new Brand introductions at the time, have been fully justified, merited and established in practically every one of the 13 varieties, though it is true a certain number of them carry slightly mor merit and desirability than do three or four of the thirteen. The finest and best of these thirteen varieties in my opinion (though all are lovely and of a high degree of merit) are:

Myrtle Gentry	Ella Christensen	Mrs. Frank Beach
Hansina Brand	Blanche King	Mrs. A. M. Brand

Only those who have gone through the personal experience of becoming a self-made and self-appointed peony fan, can know the full measure of joy the future years shall bring to the enthusiastic peony lover, through the beauty, gigantic size, and dependability of this most wonderful of all flowers. He is utterly carried away by his enthusiasm so that cost of roots mean nothing to him. What's a hundred dollars, or two hundred, yet for approximately \$50 or even less, a dozen of the loveliest peonies grown can be had.

DIGGING AND DIVIDING OLD PEONY ROOTS

Clarence O. Lienau

Peony plants grow and produce fine flowers for many years. When they become too old and the flowers begin to get small, stems are crowded and open spaces occur in the center of the plant. It is then advisable to divide the plant.

Old plants usually have a spread of fifteen to twenty-four inches in diameter and roots reaching to a depth of twelve to fifteen inches.

If the soil is heavy, dig a trench about three inches away from the outside of the stalks, four to five inches wide and five or six inches deep, in a circle around the plant. I prefer a long handle, round nose spade. Dig deep, slightly at an angle, putting side pressure all around the plant. In leaving the stocks on the plant, it is much easier to handle.

It is not necessary to have long roots. Six or seven inches in length are sufficient for a good division.

Sometimes an old clump will break in several places.

It is best to use water pressure from a hose, to clean all roots. Now is the time to cut off the stocks about one inch above the crown and start to make divisions.

On older plants, I try to break off divisions from the side of the clump, leaving three to five eyes, if possible, on the crown. Pull all hair roots off the divisions. Clean crown of all rot by scraping it with a pocket knife. If the divisions cannot be broken by hand, then I use a very heavy hunting knife about six inches long, to cut a division. Usually, you will not get a nice looking trim division from older clumps; however they do grow very well.

Keep in mind . . .

1. Do not divide a plant that has small balls clinging to the roots or hair roots.
2. Do not divide any stunted plants.
3. Do not divide a plant if the roots do not look smooth and clean.
4. Do not replant in the same location where peonies grew before unless all soil is removed twelve inches wider and ten inches deeper than where the original plant grew. Replace with fresh, new soil.
5. Do be very careful in using a hunting knife when dividing peonies.

HYBRID PEONIES.

Hybrids differ in dividing from variety to variety. Dig complete plant. Roots are not as long as regular peonies. Clean the roots with water pressure from the hose. After removing the

stalks, leave the plant or roots in the sun for several hours, which make them pliable. Examine them closely and try to cut the complete root in four pieces. Continue to work on from this point. Two eyes are considered a good division for most hybrids.

PUBLICATIONS

Handbook of The Peony—A 36-page booklet containing articles on why and when to plant, the care, culture and propagation of peonies. Price \$1.00.

Back Bulletins. Current Issues, \$1.00 each, to members. \$2.00 to non-members.

The Peonies, edited by John C. Wister (1962). Published by the American Horticultural Society, Wellington, Mt. Vernon, Va. 22121. 220 pages, information on Herbaceous, Tree and Hybrid Peonies. Many techniques of growing, propagation and breeding. A must for every Hybridizer. Price to Members, Clothbound \$3.50, Paperbound \$2.50.

Peonies Outdoors and In by Arno and Irene Nehrling (1960) 288 pages containing information in all phases on the herbaceous and tree peony. Society members \$4.95.

Send check or money order for the above literature to American Peony Society, 250 Interlachen Road, Hopkins, Minnesota 55343.

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