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About the Institute

The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

5 June 1916

(HERBACEOUS PEONY HISTORY)

IN CHINA AND JAPAN.

The popularity of the herbaceous peony in China and Japan was somewhat overshadowed by that of the tree peony, but the former kind has long had a distinct recognition in both countries. In China it was called "Sho Yo" meaning "most beautiful", which bespoke a considerable appreciation on its own account even though the tree peony was ranked as the King of Flowers.

In 536, A.D., the herbaceous peony was fairly well distributed over the country and was used for medicinal purposes and in some places even for food. This was another instance of the advanced character of the civilization of China, for the peony as a source of nourishment was surely but the prototype of some of our modern breakfast foods. Hung King writing at this date, distinguished two sorts - the red and the white. This is the first mention we have anywhere of a white peony. In 968, Mas Za, an author on natural history and natural philosophy, also wrote at some length of the herbaceous peony. In the early part of the eleventh century, according to another Chinese historian, the herbaceous peony was grown in all parts of China but the most valuable roots came from the County of Huni Gan Foo - wherever that was. By 1086, as a literary botanist of the time tells us, the florists and nurserymen realized the possibilities of the plant for ornamental purposes and began, by great diligence and strong fertilization, to produce flowers of large size.

As a result of these efforts and the extensive propagation by planting of seeds, new and better varieties were pro-

duced. In 1596, more than thirty improved kinds were listed in the catalogues of Chinese growers.

As to the subsequent development in China not much information is readily accessible. In the middle of the nineteenth century, a number of valuable peonies were exported to France to form the foundation of collections made by noted French amateurs. At the present time while the peony is still grown to a considerable degree, few exportations to Europe or this country are made - due possibly to the quality of Chinese varieties as compared with the improved varieties of this side of the world, or else to the lack of initiative of the Chinese in distributing their products.

Early in the eighth century, both the herbaceous and the tree peony were exported from China to Japan. The herbaceous peony is there called "Skakuyaku" and has been highly thought of although not accorded the honours given the tree peony, which is ranked as one of the three royal flowers. At the present time, there are at least ten large nurseries in Japan which grow herbaceous and tree peonies. One of these does a large export business to England and America and maintains offices in both countries. Twenty-nine varieties of the herbaceous peony are listed in the catalogue of this nursery - the names of some of which are delightfully quaint. Fuji - Some-Ginu - irregularly dyed stuff, Kasane-Jishi - pair of lions, Chiyo-Kagani - very old mirror, and Kame-no-Kegoromo - turtle's holiday attire - are some of the most expressive. The present exportations from Japan consist of a new race of peonies of a distinct type forming a

separate class intermediate between the single and double types
and having their stamens transformed into narrow petaloids.

PROPAGATION.

The Tree Peony is more difficult to propagate than the herbaceous peony. Probably on account of the difficulty there have been tried a multiplicity of methods which do credit to the resourcefulness of the horticultural mind.

Kipling says:

"There are nine and twenty ways of writing tribal lays
And every single one of them is right."

The ways or propagating Tree Peonies are fewer in number and are far from having the same equality of merit. There are at least nine means that have been employed with varying degrees of success.

1. Planting of seeds. The seed does not germinate for a year or eighteen months and growth is so slow that five or six more years must elapse before the plants are strong enough to flower. Persons of a phlegmatic temperament might find this method so quick as to be nerve racking, but many persons are unable to become enthusiastic over it.

*Time of planting?
Must seeds be fresh.*

Stems and roots

2. Layering. This should be done in the Spring when the growth first begins. The branches are bent down and securely fastened in the soil with pegs. In order to encourage the formation of roots, a slit is made in the inner side of the bark. It is usually two years before the layer is sufficiently rooted to remove. Two or three more years will elapse before any flowers appear.

3. Cuttings of the stem. This method is not satisfactory as it is difficult to get the cuttings rooted and as plants raised from cuttings remain in a weak state for years.

4. Cuttings of the roots. This is done during September or October. The root branches (finger-like rootlets) are cut six or eight inches long so that each cutting includes a number of fibrous rootlets

5. Vertical divisions of the stems. This ingenious practice consists of splitting the stems of an old plant in four or six parts, then filling the inside of the stems with a plaster which is left for six months, at which time the split portions with the root belonging to each are planted separately. This method originated in China and is said not to be popular in any part of the known world at the present time.

6. Division of root crowns. This is done in September or October. Each of the bigger plants has an eye close to the main stem that can be easily detached and planted.

7. Stock grafting on P. Moutan roots (wild stock).
This method is practised to some extent but is not entirely satisfactory as the stock frequently even when given great care chokes out the graft. In September or October a cion is grafted into a root that is very fleshy and somewhat over a foot long.

8. Root grafting on Moutan roots.

250
300
500

Paeonia Moutan Cultural Hints

The tree likes rich soil, well drained position, sheltered from winds, with full sunlight aspect, rather dry nature.

Nature of soil best suited - mould 50%; sand 20%; clay 15%; compost 7%; charcoal dust 5%; lime 3%.

The mould chiefly consists of straw, weeds, fallen leaves, wastes etc. well decomposed with dungs sprinkled over. Its nature being swollen and soft admits air, provides drainage but capable of retaining the soil in suitable conditions. The sand makes drainage good while the clay reserves moisture.

The roots are most liable to various whitefungi. Those infested parts should be cut off in the transplanting. A good way is to soak the roots in formalin 5% solution or lime emulsion. Unless the diseased sections be cut off by sharp knife before planting they will corrode other parts easily. Prune the tree leaving lower two vigorous eyes. Transplanting can be safely made from autumn to early spring but the best time will be in October. Dig a hole 12 in. dia., 6-7 in. deep, put in 4-5 lbs. compost and 1/2 lb. straw ash, mix the soil well, besides powdered oil cake and a little of superphosphate of lime would do well. Roots should be arranged so as not to overlap one another. After covering, pile up with dried dung or spread out straw around the roots which protects from ravages of cold winter.

Controlling and Mending - Look after with a view of shaping the whole tree before flowering time. Overgrown foliage and useless branches should be cut off. Buds in early stage ought be nipped off leaving largest one in a branch to have large flower as well as to vigorify growth for the next season. If left to nature without nipping the buds, the distribution of nourishment weakens the tree. Every branch should have supporting stake provided as it is very weak against storms.

Manuring- hitherto usually oil cake and herring waste were given, these may not be unsuitable but only these will not do besides according to the nature of soil and manuring time some require immediate effects, while in other

instance retarding therefore such simple manure may not serve satisfactorily. Compost, rape oil cake, soy bean cake, weeds or wood ashes, sulphate ammonia, saltpeter, superphosphate of lime. All these serve for fertilizing peony but they may have some shortcomings so they should be used with caution after experiments according to the climate, soil, age of tree. A standard recipe may be cited as follows:-

Compost 1 1/4 - 1 3/4 lbs., Superphosphate of lime 1/2 oz., Straw ash 2-3 oz., oil cake 1/4 lb., Saltpeter 1/2 oz.

Manganese, sulphate of iron may force developing which is said to be effective in producing bright color of flowers. Thin liquid manure would be better than thick one, taking care not to give direct but dig a furrow around the stock 8-10 in. apart and cover ~~up~~ after manuring.

Time of manuring - one month after flowers over; autumn after leaves fall; spring before budding forth; and before flowers open.

The Yokohama Nursery Co., Ltd.

Prix de Madame Edward Harding

Une généreuse Américaine, M^{me} Edward Harding, de Plainfield, N. J., Etat Unis, desirant encourager le jardinier français à persévérer dans la voie qu'il ont déjà parcourue avec tant de succès, a fondé quatre prix de cinq cents francs chacun, dont elle a remis le montant, par l'entremise de M. Emile Lemoine, à la Société centrale d'Horticulture de Nancy.

Ces prix sont destinés à une Rose, à un Lilas, à une Pivoine et à un Iris, obtenus en France, non encore au commerce, non encore nommés.

Pour prendre part au concours, les présentateurs devront en faire la demande adressée à M. le Président de la Société Nationale d'Horticulture de France. Les prix seront attribués, au cours d'une Exposition ou d'une séance, par un jury spécialement désigné par la Société Nationale d'Horticulture de France, et seront décernés au nom de la Société centrale d'Horticulture de Nancy, qui en remettra le montant au bénéficiaire, sous la seule condition que celui-ci lui présentera, à l'une de ses séances, un exemplaire de la fleur primée.

M^{me} Edward Harding se réserve le droit d'approuver le nom sous lequel la plante primée sera mise au commerce.

Il est entendu que, dans chaque genre de plantes, il n'est pas présenté une variété d'exceptionnelle beauté, le prix ne sera pas décerné, et le concours remis à l'année suivante.

Voici les conditions spéciales à chaque genre de plantes :

Rose : Hybride de Thé, fleurs doubles, jaunes, de bonne forme, croissance vigoureuse, longues tiges permettant l'utilisation pour le fleur coupée.

Lilas : Double, grandes fleurs, de n'importe quelle nuance, mais crème, rouge foncé ou violet bleuâtre de préférence.

Pivoine : Herbacée, fleurs pleines, à larges pétales, de nuance jaune ou jaunâtre si possible, blanc crème, rose très tendre, à l'exclusion

T. J. V. P.

de tons mûres, rouges et tricolores. Variété vigoureuse, florifère. ⁽²³⁾
une beauté au moins égale à celle de Variété Le Cygne, Solange
H. Emile Lemoine.

Pis : grandes fleurs, à segments de bonne consistance, de couleur bleu foncé,
plante haute, vigoureuse et florifère.



Massachusetts Horticultural Society

Horticultural Hall, 300 Massachusetts Avenue

Boston, Massachusetts, U. S. A.

Herbier général de l'amateur . . . dédié au roi par Mordant de Launay;
continué par M. Loiseleur-Deslongchamps. Tome II., 142. Paris, 1817.

C'est Sir Joseph Banks qui a enrichi les jardins d'Angleterre de la Pivoine Moutan, que nous nommons plus communément Pivoine en arbre, en la faisant venir de la Chine en 1789, selon les uns, et seulement en 1794, selon les autres. Cette belle plante n'a été introduite en France qu'en 1803, d'abord au jardin de la Malmaison, et depuis, chez quelques-uns des principaux fleuristes de Paris.

Nous croyons faire plaisir à nos lecteurs en leur donnant ici l'histoire abrégée de la Pivoine en arbre, extraite des Mémoires des missionnaires de Pékin, concernant les Chinois.

Il y a quatorze cents et quelques années que la Pivoine arbrisseau, nommée Mou-tan par les Chinois, fut trouvée à la Chine, dans les montagnes de Ho-nan, par un voyageur qui, croyant que cette plante était digne d'orner un jardin, en arracha de petits pieds avec leur motte, et les porta dans le sien. Par la suite, un bonze ayant cultivé cette espèce avec soin, ses Pivoines surpassèrent en beauté celles qui avaient été apportées de la montagne. Les troubles qui agitèrent l'empire jusqu'à la dynastie des Tang détournèrent l'attention du public de dessus cette nouveauté; mais quand, vers le milieu du septième siècle, la paix eut dissipé les nauges qui avaient éclipsé les sciences et les arts, tous les regards des curieux se tournèrent vers le Mou-tan; la beauté, l'éclat et le nombre de ses fleurs, la douceur de leur parfum, la variété de leurs couleurs, lui méritèrent les

admiration et les préférences du public. Sa culture devint l'amusement favori des grands, des riches et des gens de lettres. Toutes les nouveautés que la culture fit éclore furent recherchées, et souvent mises à un haut prix, parce que la cour en faisant cas, et que le gens en place achetaient à l'envi l'honneur de les lui offrir. La cour, de son côté, les faisant servir à sa magnificence et à ses libéralités.

Les poètes s'empressèrent de célébrer les Mou-tan; les empereurs prirent eux-mêmes le pinceau pour rimer des vers à l'honneur de la nouvelle fleur, et consacrèrent par des inscriptions magnifiques les plus habiles peintres pour la décoration de leurs appartements. On ferait un recueil très-joli et très-long, si l'on voulait rapporter toutes les anecdotes, les bons mots et les pièces de vers dont cette plante a été le sujet et l'occasion, sans parler des vertus qu'on a attribuées à ses racines.

Les guerres, les révolutions et les changements de dynastie furent plusieurs fois funestes aux Mou-tan; mais, au milieu des plus grands troubles, leur beauté sauva plus d'une fois les jardins où on les cultivait. Dans le dixième siècle, ces plantes occupèrent le premier rang dans les jardins impériaux des Song, à Kai-fong-fou, dans le Ho-nan, où la nouvelle dynastie avait transporté la capitale de l'empire; et quand Yong-lo, de la dynastie des Ming, transporta la cour à Pékin, sur la fin du quatorzième siècle, il ne voulut pas être privé des Mou-tan, et ordonna qu'on lui apportât tous les ans du Hou-Kouang: cet usage s'est conservé jusqu'à présent.

On a vu, selon les missionnaires, des Mou-tan de huit à dix pieds de haut, et formant une tête aussi grosse que celle des plus beaux orangers; on cite même les époques et les endroits où l'on a présenté à des empereurs des Mou-tan arbres qui avaient plus de vingt-cinq pieds de haut; mais cela est probablement trop exagéré, et doit être relégué au nombre des fables.

Quoi qu'il en soit, les Chinois élèvent les Mou-tan en espalier, en éventail, en buisson, et en boule; ils en ont de nains et de plus élevés,

comme nous venons de le dire; ils en ont aussi qui fleurissent au printemps, d'autres en été, et d'autres en automne. Ceux qu'on apporte du Hou-Kouang à l'empereur, toutes les années à la fin de l'automne, sont en fleur dans les mois de décembre et de janvier; mais c'est l'ouvrage d'une culture artificielle qui avance la floraison de cet arbrisseau.

Les fleuristes divisent les Mou-tan de chaque saison en doubles, et en semi-doubles, et les premiers se subdivisent en cent-feuilles et en mille-feuilles, selon que les pétales sont moins ou plus multipliés. Quant à leurs couleurs, il y en a de blancs, de jaunes, de rouges, de pourpres, de violets, de bleus, même de noirs, à ce qu'on assure; mais il est probable que ces derniers n'existent pas plus que les Roses noires que certains fleuristes français prétendent avoir cultivées dans leurs jardins. On compte, dit-on, plus de deux²⁴⁰ cent quarante variétés de Mou-tan, et ce nombre serait encore bien plus considérable, si le préjugé n'avait pas exclu ceux panachés de diverses couleurs; mais les amateurs chinois ne les trouvent pas beaux, parce qu'ils regardent ces singularités comme des marques de la faiblesse de la plante, et que rien, selon eux, ne doit être beau que ce qui est dans l'ordre de la nature.

Outre le nom de Mou-tan donné vulgairement à cette espèce de Pivoine, les Chinois l'ont encore appelée Roi des fleurs, à cause de sa beauté, et Cent onces d'or, à cause du prix excessif auquel des amateurs ont porté certaines de ses variétés.

Les fleuristes chinois, pour conserver plus long-temps leurs Pivoines en fleur, les enferment dans des espèces de tentes, pour les garantir de la poussière, des mauvais vents, des longues pluies, et ils ne leur dispensent qu'à leur gré les rayons et la chaleur du soleil, qui, lorsqu'ils sont trop ardents, les font passer promptement. Ces tentes sont faites de nattes, et tellement arrangées et disposées, qu'elles s'ouvrent de tous côtés.

Les Chinois^{ne} cultivent les Mou-tan qu'en pleine terre; ils sont per-

suadés qu'aucun soin ne saurait les faire réussir dans une caisse ou dans un pot; et toutes les Pivoines qui chaque année sont apportées de Hou-Kouang et de Yang-Tcheou à Pékin, pour être présentées à l'empereur, ont toutes crû en pleine terre; on ne les met dans des caisses ou des vases que lorsque leurs boutons sont déjà formés, et, dans la belle saison, on les transporte sur des barques pour orner les galeries et les appartemens du palais impérial.

C'est dans la province d'Yang-Tcheou, qui, à cause de la douceur de son climat, est un pays de délices et le jardin de la Chine, que le Mou-tan réussit le mieux. L'odeur des Pivoines cultivées à Pékin n'est que douce et agréable, au lieu que l'odeur de celles des environs de Yang-Tcheou est exquise, et supérieure aux plus précieux parfums.

On sème les graines des Mou-tan, on divise leurs racines, on couche leurs branches en marcottes, on les coupe pour faire des boutures, on les greffe, et tous ces moyens sont employés pour multiplier ces plantes. On ferait, disent les missionnaires, un long ouvrage, si l'on voulait entrer dans tous les détails des procédés employés par les fleuristes chinois pour la culture des Mou-tan, et si l'on voulait s'étendre sur les soins de toute espèce qu'ils prennent pour les élever, les planter, les déplanter, les éclater; il suffira de dire que l'espèce de greffe qu'ils pratiquent le plus est celle sur racine, et qu'il paraîtrait aussi qu'ils greffent sur les racines de notre Pivoine ordinaire, qui est commune à la Chine. Au reste, une pratique assez généralement en usage dans cette contrée, c'est de déplanter tous les ans les racines de Mou-tan. Cette ^{dé}plantation se fait en automne, et on prend ce temps pour séparer les jeunes racines nouvellement formées qui adhèrent à la maîtresse racine, et qu'on replante ensuite à part pour multiplier la plante.

Extract from Canon Hunt's letter 20th Feb - 1924
 "The old fashioned crimson double do well. Do you
 know the nice name "Whitcomb Roses" for these? With them
 they generally flower in time for the altar on Whit-Sunday
 the ecclesiastical colour for which is red."



BOWL OF PEONIES ARRANGED BY MRS. EDWARD
 HARDING, PLAINFIELD, N. J.

Published by the
 Massachusetts Horticultural Society
 Organized in 1829

Mrs. Harding Honored

Nov. 15th Dec. 1928

MUCH interest is being shown in the announcement just received that the Republic of France has bestowed the decoration of Chevalier du Mérite Agricole upon Mrs. Edward Harding of New York and Plainfield, N. J., in recognition of her work in horticulture.

Mrs. Harding has long been known in connection with her work with the peony. The fact is not so widely known, however, that she has also specialized in lilacs and irises, of both of which she has superb collections. The bulk of the choice material in her garden is of French origination. Always an ardent admirer of France, she has kept in close touch with French horticulture.

Besides her work with actual horticultural material, Mrs. Harding has written two books on the peony, both of them well and widely known. For the second book, "Peonies in the Little Garden," published in 1923, Mrs. Harding was awarded a medal by the Société Nationale d'Horticulture de France. The honor now bestowed upon Mrs. Harding is a rare distinction, for the decoration has been awarded to only two other women, Mme. Philippe de Vilmorin of France, and Miss Ellen Willmott of England.

DIVIDING PEONY CLUMPS

Points on Suitable Divisions from
T. C. Thurston's Book

In their excellent manual on *Peonies*, T. C. Thurston's Sons, Inc., (Gibbs 10th, New York) of West Newbury, Mass., contain some important information regarding the dividing of clumps for planting. Some of them are as follows:

In dividing clumps for planting we have found that the best results were obtained when the divisions were composed of two or three strong, healthy roots averaging in size about one inch thick and at least four or five inches long with a sufficient number of strong fibrous roots to form a well-balanced plant. On the more common varieties the smaller roots with only one or two small eyes are usually discarded as we do not feel warranted in waiting for them to develop into valuable sized plants. In fact it is a question whether a very small, weak division will ever become the vigor and quality of the parent plant. The small roots with two buds will be better and really amount to more to the end if left attached to the larger divisions and in the long run produce more buds.

Results have gradually led to the establishment of general quotations on one-year plants or strong divisions in equal size year plants in size. For quicker results in permanent locations or three-year plant change are recommended.

We are writing this as a number of inquiries are coming in asking us for divisions smaller than those we usually send out and at prices proportionately low. To all such we earnestly and conscientiously advise that whenever possible you plant one-year plants or full-sized divisions equal in size to your year plant.

It, however, you do not feel like incurring an extra expense and are willing to wait a longer time before

using the peonies of your choice in your winter flower beds, you can supply them with smaller divisions at proportionate prices. This size will usually consist of a strong vigorous root with one or more eyes, for in no case will we send out small inferior roots with weak eyes. We will be glad to advise you the price and varieties in which we can supply them.

A number of points should be observed in the planting and care of these small divisions as they should be given nursery care. They should be planted in good garden soil where they will receive plenty of air and light and not be crowded or shaded by larger plants; they should receive enough water and plant food through the summer and be looked for the first three or four winters. Under no conditions is it advisable to move or

divide these plants under four or five years as constant dividing does a great deal to gradually weaken the vitality and in the end will never get remunerative plants or blossoms.

PEONIES

Grown successfully
in the
SOUTH

Refuting the Popular Idea
That These Gorgeous Flowers
are Only for Cold Regions

CYRUS N. RAY



THE very general absence of Peonies from the gardens of Texas has led me wondering if there were any good reasons why so beautiful a flower could not be grown in the South, so the attempt was begun in the spring of 1916 with one very small division of Madame Cadiot.

The success attained with this one plant was so complete that a number of other named varieties were planted, and an entire bed was given over to Peony soil.

The soil of the bed was black and sticky, and in tender it light and friable it was dug more

than a foot deep and enough sand and bone sandy loam thoroughly mixed and incorporated into the soil to make the bed into a medium sandy loam resembling rich wood's earth in texture—a soil on which water holds to stand, but which at the same time is much more retentive of a proper degree of moisture than the original clayey soil. The addition of sand and loam raised the surface of the bed ten inches above the yard level. The edge was set with large rough hold stones to hold it in that level.

The Peonies were set so that the dormant buds were covered with earth to a depth of from one-half to one inch. As the ground here rarely freezes more than a few inches deep, this means freezing of the roots.

It is my opinion that if planted deeper, the roots being done a proper way, the roots would

The beds were watered heavily with the hose every three weeks during the dry winter months and about once a week during summer if the weather remains dry. Once in the fall, and once in early spring a pint of bone meal fertilizer is worked into the top soil in a circle of three feet around each plant. At least twice a year or so-dashed or powdered lime is sprinkled on the surface, enough to whiten the ground, and watered in.

Once a year some wood ashes or potash fertilizer is lightly sprinkled between the rows and watered in. The bed is situated north of a low picket fence which is vine covered. This shades the roots during the middle of the day but allows the full sunlight to strike the foliage. Some tall shrubs obscure the rays of the hot afternoon sun.

The first very small division planted in the spring of 1916 failed to bloom until

1920, when it had two large blooms. In 1921 it had seven; in 1922 ten; in 1923 fifteen; in 1924 thirty; and in 1925 thirty-three full-size blooms, six inches in diameter, and four inches in thickness. Besides the full-size terminal bloom enumerated above, there were each year about a third more of the secondary size which were about four inches in diameter. Counting both terminal and secondary blooms Madame Cadiot had forty-eight in 1925.

In the fall of 1923, a small root of *Paeonia officinalis* was set out. In 1924 it had two blooms.

In the fall of 1924 Archie Brand, Mary Brand, Moss, Jules Elie, Felix Crouse, and H. F. Redick were set out. These were from northern growers who sent strong roots. Excepting Moss, Jules Elie all gave from two to three large blooms each the following (1924) spring.

In 1925 Moss, Jules Elie had three large blooms, one seven inches in diameter, and four inches thick. Archie Brand had five, the largest six and a half inches across.

Because of a too shaded position and insufficient summer irrigation the three red ones named above failed to bloom but have made good growth last year (1925).

In the fall of 1924 Petite Rose, *Paeonia Maximii*, and *Madame* were planted. All made good growth, and Petite Rose produced two large blooms in the spring of 1925.

Two Tree Peonies were planted three years ago; they have failed to bloom. In the fall of 1924 about two hundred Peony seeds were planted under a late arbor. Eighty of them came up early in the spring of 1925. Most of these survived the summer, and in September, 1925, seemed to have good dormant buds and roots.

Raising Seedling Peonies

About fifteen years ago, when I began to raise seedling Peonies, my collection was small but I had several good varieties. I found it was easy to cross which is not the case with lilies. I recorded my crosses with the hope of finding an ideal one. I did not expect colors to breed true, but I found later that they will do so to a certain extent. The yellow color in Peonies probably

does not breed true. My seedlings of *Paeonia* & *James Kellogg* were mostly white, the majority of *Paeonia* being heavy stem, a fault of *Paeonia*. The qualities of the parents are the first to be transmitted to the seedlings, and if one is breeding for an ideal, he must select parents nearest to that type. My objects were large flowers on tall and strong stems, to be suited to *James Elie* and *Miss Rose* as parents. The seedlings came fully up to my expectations, they had large, healthy foliage clear to the ground, strong stems, and vigorous growth. Many had double flowers and some of very large size. The percentage of good varieties was larger than in any cross I have tried. With the hope of producing early blooming varieties I have crossed an early blooming Chinese variety with the species *Decorata* Blatter. The latter blooms about two weeks ahead of the other and I had to force the Chinese variety for the purpose. *Paeonia* *Maximii* and *Le Cygne* hardly ever produce seed. I open the flowers and look for pollen. If I find one with a perfect stigma, I cut away the center petals and apply pollen. After a few days they must be pollinated again and some seed will form.

In trying for red varieties I used the pollen of *Miss*, *Martha*, *Lakewood*, and several strong growing varieties for seed parents, including the old *Duchess of Argyll*, a poor variety, producing large sized seeds, but having strong stems. I have bred *Miss*, *Jules Elie* also, but in all instances the seed does not germinate well, and I attribute this to *Cadillac*, which is a poor grower, subject to leaf spot and other diseases. Whether the climatic conditions of Nebraska are responsible for this, I do not know, anyhow it is not a strong grower with me. The seedlings are somewhat slower in growth and it takes a year longer for them to bloom. There are many reds, some quite dark red, but in most instances the plants are lacking in constitution. So far I am not very enthusiastic about my work with *Cadillac* and am beginning to believe that better reds have to come from other sources. My experiments with *Officinalis* *Rubra* & *Stamens* failed. The seedlings are variably blighted before reaching the blooming stage—H. F. P. Saxe, Nebraska, (in *Minnesota Horticulturist*)

Better still, however, would be an isolated arrangement of irregularly shaped grounds in wood or park. One can imagine a woodland clearing of about a quarter of an acre in extent carpeted with mosses, ferns, and here and there tall groups of penstemon, the tree growth around making an effective background for the exquisite tints of the flowers.

From an article in the Garden magazine, June 1925
from the Railway

Practical Points about Peonies

One of the best posted growers of Peonies, and a man who has made a long study of the subject, in answer to an inquiry writes as follows:

"If the clumps are very large, that is, four years or more old, you will find when you dig them up that you cannot make very nice divisions from them. Two-year old or three-year old roots make the kind of divisions which dealers like to sell and it may be better for you to dig up your roots this fall and divide them into two- or three-year divisions, and replant them in fresh soil, and then sell them when they are one or two years old.

The center of a four, five or six year old Peony root is usually decayed by the rot which comes in when the stems decay in the fall and with this decayed center divisions make a poor appearance."

Care of Seedling Peonies

It has always been a common Peony tradition of this people to grow them in the early part of the season, and then to move them to their permanent place in the garden in the fall. This is a very good plan, and one which is well worth following.

Answer—In a large bed of seedling Peonies about 10 per cent will bloom the third spring after planting, about 35 per cent the fourth, and all should bloom the fifth, provided there have been no weeds in cultivation or other conditions which would retard the growth of the plants. Two-year old or three-year old roots make the kind of divisions which dealers like to sell and it may be better for you to dig up your roots this fall and divide them into two- or three-year divisions, and replant them in fresh soil, and then sell them when they are one or two years old.

When the plants are two years old they should be transplanted early in the fall to the permanent bed, in rows three to four feet apart, and from six inches to two feet apart in the row. Take care to set the top eye full two inches under ground. After they should be left until they bloom and allow the plant to grow or more stalks at this time, I believe time is ultimately gained to issue them one or two years later. Seedling plants are like children, much more susceptible to disease and adverse conditions than adults, and I have found that it does not pay to hurry them. After the first blooming they have to go through high school and college and choose their life work, all this taking from six to eight years, during which time they may be divided and re-set two or three times.

This means that it takes from eleven to thirteen years from time of planting seed to really know what a Peony will do. While I have never heard of a change in color, other than a slight change from year to year due to weather or other conditions, and which affects all Peonies, seedling Peonies will change their form of bloom quite decidedly in some, but not all, instances. I do not believe that one will change from single to double, but they will, and the change from semi-double to full double. One seedling in my garden which may not be good enough to introduce, but which I like very well myself, gave first bloom about the size of my thumb, now it is at least six inches across. A dark red has been full double one year, semi-double another, and now they are still smaller. Most typical bloom is, of course, obtained when the plant is three or more years from division.

Peonies do not come true from seed, and it is usually inferior to the parent plants. It has been a common saying that one was lucky in and one really first-class seedling out of a thousand, and this might be true if seed from only poor varieties or crosses were used. But if the seed comes from choice double varieties one can do very much better, and is sure to get a good many which will be worthy a place in his own garden, even if not distinctive enough to introduce under name.

There is a fascination in raising seedlings much greater than in direct gardening, probably because being mostly better, what little seed one gets is very sweet, and I must plead guilty, from small start with some volunteers, to having over five thousand seedlings, two years or more old, as well as three months of seed planted last fall.

HOWARD ARNOLD, JR., (Illa)

The Peony

Spraying Peonies Pays

BY EDWARD AUTEN, JR.

THIS Summer in visiting other plantings of Peonies than my own, I had so forcibly impressed on me the need of preventive spraying, that even though a formula has already been printed in *THE FLOWER GROWER*, several times, I deem it will worth while to tell again that spraying Peonies pays, and pays well; that sometimes it is absolutely necessary; and even if not, it is a great advantage to do it; and that it will pay more than it costs, either in more flowers, healthier roots, better appearing foliage, or general increase in vitality.

There probably are several kinds of Peony blight. The commonest is called Botrytis, and it is worst just before blooming time. The spores live over Winter in the soil, and possibly also in soil close to infected plants. These spores fruit and give off countless invisible spores which float in the air, and are especially apt to attack the new leaves, and possibly also the stems, at the leaf joints.

First a black spot appears, then it spreads. Soon the bud is ruined, and the stem rots to the ground and falls over. The spores ripen, the buds show a white fuzz, which is the seed crop of the disease, and new spores float away to begin a new cycle. Whether this disease persists all Summer, or whether a different form of blight turns the leaves brown, after blooming either entire or in patches, does not concern us here, for the remedy for one will cure all, or rather prevent all, because there can be no cure for a bud or leaf once it is infected. This blight is worst in cool, cloudy wet weather.

THE first preventive measure should be the cutting close to the ground and subsequent burning of all Peony stems each Fall, in October. If not done then, it should be done very early in the Spring, but this is not nearly so effective. Peonies do not need the winter protection of the tops. In fact, they will stand fifty degrees below zero without protection, but corn-stalks or a little straw can be used if desired.

The instant any blight infection appears on a growing plant, it should be cut off below the infection. Some advocate cutting off the entire stem at this time, but this is not necessary. Oftentimes one can tear off a leaf, cut and burn immediately all that appears on that stalk. But it is very important to keep knife or fingers free from infection in doing this pinching out, and be sure to wash the infected parts at once. Theoretically, if all blight

were pinched out, no new spores could be formed, and the blight would be exterminated. Many people recommend no other efforts to prevent blight.

However, the infection may be carried a long distance by wind or bees, or some infected plants may be overlooked, and it is here that the use of Bordeaux mixture as a spray is most effective, when supplemented with the methods given above. Some object to the Bordeaux because it discolors the foliage. The regular mixture, in the proportion of about four pounds each of stone lime and blue-stone, fifty gallons of water, is objectionable in this regard, though it will not actually harm the plant. B. C. Auten has worked out a formula of one pound of blue-stone and one-half pound of stone hydrated lime to fifty gallons of water. This is almost indiscernible on the foliage, and I know from experience that it is most effective in preventing blight.

If but one application can be given, put it on when the buds are the size of buckshot, and above all else, DO NOT wait until blight appears. A bright sunny day is best. Rain, of course, washes the spray off, more or less, and a rain immediately after spraying might undo all that had been done, making another spraying advisable. Two years ago the blight was bad, one plant especially that had about forty stems I almost denuded. Last year I sprayed once, was fortunate as regards weather, and did not lose a total of five hundred old clumps while the clump that was so bad the year before was absolutely clean and healthy. I took pains to spray my neighbors' Peonies as well as my own, however.

IF POSSIBLE, Peonies should be sprayed when about six inches high, then when the buds are like buckshot, as mentioned above, and once or twice or even three times during the Summer. All faded blooms should be picked off and burned, unless left for seed, as the old petals are especially susceptible to blight. In spraying, be careful to cover the entire stems and foliage, wetting the buds, and the leaf joints on the stems, and also spray the ground where the stems come through. If the blight gets a start, by all means spray at once, to head off new infection, but be sure to cut out and burn immediately all that appears, as spraying will not keep it from going on down the stalk and rotting it. Look the patch over at least once a day, twice is better.

Now many may say that their

Peonies do not rot with this Botrytis at blooming time. If so, they are fortunate. But if they do not spray, the chances are great that they have many buds which when the size of a buckshot quit growing, turn a reddish brown, and then wither. I saw so much of this trouble on commercial plantings this Summer it would have been disheartening had I not known that spraying would prevent it. The growers with whom I talked did not seem to think their Peonies needed spraying, and took their loss from this "candy bud" blight as a sort of inescapable loss, or else called the varieties so affected "shy bloomers." One year's spraying will eliminate this candy bud blight, but I know from experience that continued spraying will do it.

IN ONE plant a grower may have an investment of anywhere from fifty cents to two hundred dollars, and why they will not awaken to the value of this preventive spraying is hard to understand. The value of spraying apples and potatoes is an accepted fact, and the value at stake when a stem is lost is a small part of the value of an entire plant. I never saw a patch of Peonies which had not been sprayed which did not show signs of some kind of loss.

Not only does blight cause loss of blooms, but when a stalk rots down, it opens the way for crown rot underground, which checks or limits the root increase. Leaves affected with blight are ugly, and fail to nourish the plant properly, which results in lowered vitality. The amateur grower will profit from spraying just as surely as will the commercial grower. Most of us have a small spray rig anyway, for fruit, and the cost of the Bordeaux mixture is almost nothing. All we need is a little gumption to fight before we see the foe.

Let me say that when we find some weeds close together, that makes ideal conditions for the spread of blight. Better make the circle large enough for the stalks to bend out, and the stems supported close behind the blooms. This latter prevents broken stems, where as in the case of some large blooms the stems will break six or eight inches down from the weight of extra stalks. If they are supported erect. Less obtrusive iron pins and a stiff wire circle may be used if one wants to go to the trouble and expense of getting them made, but they are no more effective than the chicken wire which is always obtainable. Some enthusiasts even erect canvas shelters over each clump to keep off rain and hot sun, but that is quite expensive, and has few advantages over cutting some of the blooms and keeping them indoors.

EDWARD AUTEN, JR.

The question has come up as to whether Peony roots showing no eyes need to be planted. It is commonly understood that the Peony is, in the respect, like the Dahlia, that eyes must be present in order to make top growth. But it is a fact that if any crown tissue is present on roots which do not show eyes, that it is altogether likely that such will grow and make thrifty plants. Mr. Auten has promised to give us some suggestions along this line in a future issue of *THE FLOWER GROWER* which will be not only interesting but helpful from a propagating standpoint.

Calcutt, N.Y.
May, 1925

THE FLOWER GROWER

The Peony

Effective Methods at Blooming Time

BY EDWARD AUTEN, JR.

PROBABLY many a Peony fan has wished when his Peonies bloomed he might have a three weeks' vacation from his regular occupation; that the weather would be calm, cool and fair every day; and that all his friends might come from no matter how far, and share with him the beauties of his gardens. But alas, important business matters have a way of coming along with discouraging regularity; we are tied to our offices; it rains torrents at times; and many of our friends cannot come; so that there are bound to be some disappointments mingled with our pleasures.

Many things can be done, however, to forestall these trials. One year I rained continuously here throughout the whole season; but even under such conditions one might have much pleasure from Peonies, by most of them the most important item is to support the plants in some way so that the blooms will be kept out of the mud. Rain does not do a bloom any good, but if a bloom is close to the water can be shaken out of it, and it will last for some time thereafter. Seven to ten foot lengths of 18 to 22 inch chicken fencing make a very satisfactory support. It can be lapped over to make any sized circle; does not disturb the roots; and can be removed and stored immediately after blooming. No support should be so light as to draw the leaves close together, as that makes ideal conditions for the spread of blight. Better make the circle large enough for the stalks to bend out, and the stems supported close behind the blooms. This latter prevents broken stems, where as in the case of some large blooms the stems will break six or eight inches down from the weight of extra stalks. If they are supported erect. Less obtrusive iron pins and a stiff wire circle may be used if one wants to go to the trouble and expense of getting them made, but they are no more effective than the chicken wire which is always obtainable. Some enthusiasts even erect canvas shelters over each clump to keep off rain and hot sun, but that is quite expensive, and has few advantages over cutting some of the blooms and keeping them indoors.

While a few people do not like to cut any flower, one should, if possible, have enough plants to be able to cut all he wants and still have a show in the garden; for flowers in the home and at the office, at church and sent to friends, can add much to our enjoyment. Moreover many kinds, of most delicate coloring, show their true beauty only when opened in the sub-

dued indoor light, away from the hot bright sunlight; and a bloom will last longer in water indoors than on the plant. It is surprising how the development of the bloom may be controlled by different methods of cutting and handling.

THE most important points in cutting are these: For the sake of future growth and bloom, leave at least two, or better three, leaves on each stub; or if cutting full length stems, take only two or three from each large clump. Second, set the bloom immediately in water. (Carry a pail with six inches of water in it when you go to the garden.) Third, cut a bloom before it is entirely open. (Use a sharp knife, not shears.)

Other points depend on the use to which the bloom is to be put. If it is to be put in cold storage to be held for a late show, or is to be sent on a long railroad journey, all the leaves or all but the top two or three should be stripped off. A stem can hold only so much reserve water, and if the leaves are left on, water evaporates through them and the bloom is robbed. Last year I sent blooms on a three day, 2,000 mile, trip to California, across hot deserts, and received word that the blooms all opened nicely after arrival. If blooms are to be held only a few days, or used at once, the lower leaves only, say one or two, can be removed for ease of handling and arrangement.

It is almost an art to know when to cut a bud for use on a definite future date, and a knowledge of the habits of different varieties is a great help in this matter. One may cut with success. Suppose you want to decorate for some large service or function and you fear that it will storm the day before. You can make certain of having good blooms by going to the patch two or three days beforehand and picking blooms nearly half opened, then storing them in a cool cellar till a few hours before they are needed. I favor standing all stored blooms in water; but good results may be had by standing them in water for about four hours, by which time the stems will have loaded up with water, and then laying the blooms out in such a manner that the petals will get no drip or contact from near-by stems. Spurred blooms can be held to make a larger show at any one given time for visitors, and of course the season may be lengthened several days by storing some of the latest varieties.

For commercial storage, the rule is to cut when the first petal raises, which usually means that the bud is about the size of a small walnut and quite hard. But this will work only with the few tested commercial varieties, while dozens of our fine show kinds would not respond to such methods at all. Moreover the florist opens these long held blooms as slowly as he can, often taking several days, and I must say that some of the blooms I have seen offered would not appeal to a Peony lover.

Last Summer when preparing for the National Show, being rather south of the main Peony fanciers, I had to hold some blooms twenty days, and I picked six hundred blooms, trying to get them when the upper third of the bud had started to soften. This stage often lasts only a few hours, and it is important to get the blooms into storage as soon as possible to check further opening. I lost my first and finest blooms from all my *Therese* for show purposes by being away at a private display I put on in Peoria, when the other day, for the National Show had to be cut, with the second grade blooms. But of the 600 blooms I took on the day before trip to Des Moines, none had gone bad, most of them opened perfectly, even *Unbelated Roses*, and some *Officialis Rubra*, very early kinds, and only about 40 failed me; these being hard opening kinds, or a late, like *Eugene Verdier*, *Mad. Poid*, etc. But about half of these developed on the second day of the show.

AS A rule, the first few blooms on a clump are the largest and best, but it is often impossible to time the first bud, so I make it a rule to wait until the first bud is safely opened. It may hang for a week after it seems ready, before it actually opens up; but after it starts, the others are pretty sure to follow without delay. Blooms for local shows may be cut when open and taken direct to the show room, but it is much better to cut them ahead of time, if even only twenty hours, and let them stand with water. They stand handling and arranging much better. This is also true when you are giving or selling blooms to visitors at the garden. Blooms cut and then laid in the bottom of an auto for a couple of hours will wilt down, and while they may revive later, they are damaged, and will not last as long as those which have been prepared a couple of hours even in advance. Blooms should be cut when the petals are dry if possible.

Blooms may be kept in the home ice box, but if a cold storage plant is available it is better. Blooms which have fallen back on our local butcher, and though he ran the temperature down to 25 degrees nearly every day, and some of the best show blooms in the country plainly when taken out, still they all recovered in good style. Probably 34 degrees is as cold as could be recommended, and 40 to 45 is effective. Peonies out of storage may be shipped dry in tight paper lined

LADY ALEXANDRA DUFF, lovely French white, that is to say not a snow-white, although when fully opened it is quite white; in the extreme stems streaked with a cream blush.

THE FLOWER GROWER

Plant Characteristics of Different Peonies

BY EDWARD AUTEN, JR., (III.)

THE scale of points now approved by the American Peony Society to be used in the rating of Peonies is as follows: Color 25, Form 15, Size 15, Substance 10, Odor 10, Distinctiveness 15, Stem 10, Total 100. Color is still by all means the most important single point in establishing the worth of a Peony, and there is still much room for improvement in our list of varieties in the matter of color range. Yet with nearly two thousand varieties now listed, and new ones coming out in increasing numbers each year, it is evident that final acceptance or rejection of a variety may of necessity be determined by characteristics other than that of the flower exclusively; or in other words, by plant habits, etc.

Of the above 100 points only the last, (Stem 10), deals exclusively with qualities other than of the bloom, though Distinctiveness 15, might apply in small degree to the plant. In addition, however, there are points to be considered which are not covered in the above list. These are of especial importance in determining the value of a variety for use by the professional florist, and as this is said to be the ultimate test of any flower, it, therefore, is of interest to us all.

Study of the plants in a bed of some hundreds of different kinds is quite fascinating, especially from the time they come through the ground until they bloom. Some one has said that the Chinoiserie or Albiflora species, from which most if not all of our common Peonies have sprung, and which in its wild state in northern China and Siberia gives clusters of single white blooms, has also been known to give some pink or light red blooms there also. If this is true, our entire range of color from pure white to deepest black-red, might have been developed entirely within the Albiflora species, and a collection of modern varieties with their wide variations, would stand as a monumental evidence of the possibilities in plant breeding. Some varieties of the Albiflora family, in which the Japanese varieties are usually included, exhibit variations so foreign to the wild Albiflora species that it seems more than probable that the blood of some of the other twenty different species has been infused into the Albiflora.

Take the matter of number of blooms on a stem: The Albiflora blooms in clusters, while the Oficialina and Pinnifolia species, and I believe, several others, invariably bloom one on a stem, and the Anemola usually does, though not always. Now there are several varieties which bloom one on a stem. *Miss Irene Dams*, for instance. In my own work with new seedlings I have had three show this

characteristic, one a single pink showing Japanese parentage, one a semi-double pink, and one a full double white, though the first two occasionally throw one or two side buds. Some growers list the Japanese variety *Mikado* as blooming one on a stem, but it often gives several blooms. However, it shows enough of this habit to make it desirable for use in hybridizing. Several lists of new seedlings contain varieties for which the one bloom to a stem habit is claimed.

GOING to the other extreme, *La Esmeralda* generally throws about nine buds to a stem, and the work of disabund such a variety is a real factor in the cost of producing blooms. *Souvenir de l'Exposition Universelle*, a fine light red, sets so many buds per stem that its value as a commercial variety is definitely decreased. Most varieties give four to seven blooms per stem, *Theresas* being almost typical.

But there is a great difference in the way the buds are placed on the stem. An ideal variety, of those setting many buds, is *Edulis Superba*. It has one large central bud, on a stem which extends say ten inches above the foliage, and spaced along this ten inches, the other buds stand on rather long stems, branching out from the main trunk. These side buds are easily removed, and there is little danger of damaging the main stem in the process. *Festiva Maxima* is also good in this respect. Some other kinds, like *Madame Emile Galle* and *Grover Cleveland* develop the buds more in the form of a cluster all close to the end of the main stalk, and on branches of nearly equal length and size, making disabund more tedious, also more apt to result in damage to the bud to be left.

Wide variation is shown in the carpels or seed pods. Those of Albiflora are smooth and green, those of the Oficialina species are hairy, and many of the Japanese varieties are large and crinkled. *Mad. Auguste Desart*, an Albiflora variety, has hairy seed pods, several others show the same characteristic to some degree. Many of the carpels of the Albiflora varieties, especially of the reds, are an ugly purple at blooming time, though they later turn green. While not always objectionable in the red blooms, they are very much so to me in the whites and pinks, and especially in the singles and Japs. In fact, several of the popular and highly rated singles look positively hideous to me because of this one defect, and I believe it is one which will not be ignored much longer by the majority of fanciers. There we are not to put up with such varieties indefinitely is proven by the fact that Thurlow's

magnificent single dark red, *Black Prince*, has pale green carpels, and if we can get them in the reds, it should be ten times easier to get them in the pinks and whites. In some varieties such as *Nellie*, a single pink, only the tips of the carpels are colored, and that harmoniously with the petals, in a way to add real charm to the flower.

The crinkled and larger seed pods of some of the Japanese varieties are one of the strongest arguments we have to support a claim that they have used other species with the Albiflora in order to get these odd, slender stemmed, graceful and most charming flowers. Then when a typical Jap bloom comes on a typical Albiflora plant, we wonder whether after all, this difference in plant habit may not be the result of selection within the Albiflora species.

THERE are very few distinctly dwarf Peonies. *Branda Little Sweetheart* and *Commodore Ensign* can be classed as such. *Ostasia Denny* is a fine short-stemmed variety, but the flower is large, and the leaves so placed that a stem long enough for florists' demands can be cut without serious damage to the plant.

Stem habit may be listed in three classes: (1), those strong enough to support the blooms after a beating rain; (2), those able to support the blooms until a storm strikes them; and (3), those which cannot keep the bloom off the ground at any time. These habits are not determined by length of stem. *Ostasia Denny* with its short stem, falls in the second class, not the first. The two stiffest stemmed varieties I know are *Eugene Verdier* and *Umbellata Rosea*, and both are rather tall. Probably more than one-half of all varieties could be put in class two. In class three we find *Elizabeth Barrett Browning*, *Adelle* and *Gigantea*, all worth having in spite of their weak stems.

For the cut flower trade, however, stiffness of stem is not the most important item. The trade accepts a flower with a fifteen inch stem, but prefers one of eighteen inches. Almost any stem is stiff enough to support the bloom on a stem of that length after being cut, and moreover, the flowers are cut when still practically in the bud state, and a rain before that time will do no especial harm to the blooms. So few Peonies will support their blooms after a hard rain that we might as well stake all varieties as a matter of course, when allowing them to develop their blooms on the plant.

The most important point in stem habit is enough length above the main cluster of leaves to permit of cutting satisfactory stems without so rubbing

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a space and also used evergreen trees as a background for Peonies in large variety and of splendid quality.

The lecture hall contained three groups arranged for effect in competition for the President's \$100 silver cup, and here again the Cherry Hill Nurseries put up the winning display with great hanging baskets suspended from tripods and filled with choice flowers. Two other excellent groups, set up by Mr. Donahue and Mr. Jenkins, were placed side by side within a double T formed by tables containing Peonies in classes. A feature here was a large display of splendid seedlings brought on by Prof. A. P. Saunders of Clinton, N. J. Prof. Saunders is very slow to put into commerce any new varieties not obviously superior to those now being planted, but some of his seedlings are very promising. Messrs. Shaylor and Allison of Ansburdale also exhibited seedlings and new named varieties of great beauty. Mrs. Shaylor-Force was pronounced by experts the best white Peony in the show.

The second prize for the most comprehensive display of Peonies went to Anton Bulk of Middletown, R. L. a decided honor for a grower who has been in this country only two years. His display centered around Queen Wilhelmina, a variety which aroused much discussion, everyone admitting its great beauty, although the general impression was that it resembled Sarah Bernhardt closely.

Two magnificent displays set up by George N. Smith of Wollesley Hill and attractively arranged in tiers were much commented on because of their great variety and outstanding quality. Mr. Smith has learned the art of showing a lot of flowers in such a way that all of them can be seen.

Mr. Arthur Feskes of Newton displayed some excellent seedlings, a fine lot of singles and many of the standard varieties grown to perfection. A particularly conspicuous bloom in his display was a specimen of Henry C. Avery, a flushed white variety and one of A. E. Brand's best productions.

Mr. Charles R. Dewey of Gardner had an excellent collection with specimens of Le Cygne and Rheine Hortense that have seldom been surpassed. T. C. Thurlow and Sons' Edwin C. Shaw caught the public fancy. This flower is clear rose and very beautiful. The Thurlows' Peonies June Day, James R. Mann and Pride of Essex, deep flesh pink were exceptionally good. The deep red Cherry Hill was also shown in fine form.

Review of the 1925 Peony Rating

HORTICULTURE

GROWING THE PEONY

How to Raise the Different Types from Seed

By PROF. A. P. SAUNDERS

One of the most interesting features of the recent great flower show at Horticultural Hall, Boston, was a lecture by Prof. A. P. Saunders of Clinton, N. J., on the growing of the Peony. A brief abstract of this lecture is given below. The lecture will be printed in full in the next year book of the Massachusetts Horticultural Society.

How far back does the Peony go? Let us trace its history. In the hall is a magnificent display of Peonies. Where did most of them come from? Some varieties were originated by American growers. Anyone who grows Peonies from seed knows that seedlings are all some different. We throw away 999 out of 1000, but the thousandth is a beautiful new form.

Long before Americans began the work, the French were raising seedlings and selecting the best. Where did the French get their Peonies? In 1805-6 they were first brought over from China and introduced to European gardens, and enthusiasts there immediately started to raise seedlings and to improve upon the varieties which had come over from China. In France and Belgium enthusiasm spread to England and crossing began there, and in America later on the same process was taken up.

Boston has the credit of being the center at which the whole Peony culture in America started. Its serious performance began here through John Richardson, who lived in Dorchester. If you are interested in knowing the particular varieties of Richardson's which I have in mind when I speak so highly of him, I would mention to you before any others Walter Faxon, Milton Hill and Grandiflora, and then stop. A man who has made three Peonies as good as those may very well rest on his laurels. Walter Faxon I mention first of all for this reason.

It has always been easy to grow beautiful white Peonies—Peonies that are white or pale flesh colored. In modern times we get such things as this—very pretty flesh colored things—hundreds of them. Once in a long while we get something exceptional—we get dark reds, mahogany reds, magentas. In the full pinks, darker than this but somewhat in the color of this we have very little among the double Peonies that is satisfactory. The full pink Peonies are apt to run too much into purplish reds, into disagreeable purples, into muddy and disgusting magentas, and

those things have short shift in my patch and equally short shift in the patches of others who raise Peonies. If I buy Peonies and find that they have this color, they also go into the large dump which I keep for the Islamids.

Another great group of Peonies are those called Tree Peonies. They grow three feet high with me, but in England they grow six or eight feet high. Tree Peonies, P. moutan or arborata, make permanent woody growth above ground, and form flower buds for next year in the axils of next year's leaves. These are forming now to make new branches next year and next year's flowers. This plant has been cultivated by the Chinese for many centuries, and is one of their favorite plants.

With the herbaceous type you enter the roots or sow seeds and put them in the ground, and you need give them scarcely a thought for fifteen or twenty years. But with the Tree Peonies you must think of them day and night, because they are liable to attacks of all sorts of maladies, and particularly to one which I call sudden death. The Tree Peony has a particularly annoying trick of coming into full bud, half a dozen or a dozen plump buds.

The European growers, have grafted the Tree Peonies onto the roots of the herbaceous Peonies,—very well in some varieties and very poorly in others. Some bloom very luxuriantly. Others do not bloom.

In the old days before the existence of Quarantines 37, all we needed to do was write an order to France or England and get them. Or order from our own nurseryman who in turn sent the order abroad. Under present restrictions no Peonies can be received from abroad, and there are none for sale in America. I know of, I think, only one place in America where Tree Peonies are offered for sale. Mr. Farr, of Wyoming, has some plants, not many. What are we going to do about it? You say, "Why does this man tell us about Tree Peonies and say they are so beautiful and then say we can't

get them?" I can tell you. It's a long process, requiring determination and devotion, but the only sound method is to grow them *yourself* from seed. There will be no trouble from grafts or shoots from the stock if you have peony seedlings. They are your own and they are permanent, very healthy, and will bloom regularly.

I used to be asked, "You say that grafts have you that your seedlings will be of sufficiently good quality to be satisfactory?" I must wait for that until they bloom. I have from fifty to sixty in full bloom this year, some with fifteen or eighteen flowers apiece. They are as good on the average as stock we used to buy, either in Japan or Europe.

I suppose you have some curiosity as to where you can get your seed. There is no seed to be had, either. Neither plants nor seed. I can suggest only one thing: That is that you ask me for it. I have 100 Tree Peony plants that bloomed for me. Most will set seed, and I shall probably have 200 seeds. Those who want to try a few need only give me your names. In the autumn I will send you small packages of seeds, according to the size of the crop and the number of requests.

There are two main groups that I should like to speak to you about though very briefly. Both species which I have spoken of are Chinese plants. Now there is a species native to Europe, *P. officinalis*. It is exceedingly common in New York, but is not quite so widely disseminated in Massachusetts, but is a very pretty plant. That group, the *Officinalis* group, also blooms earlier than those, and normally they are all over before the Chinese group begins.

I am trying to answer the reproach that is cast upon the Peony very often, that it has too short a season. Well, the Chinese Peony has a very short season. It has a season of about three weeks, and we see no way of extending that season except by cold storage, which prolongs it into midsummer, but that is of no use to the grower, but only to the cut flower man. The way to extend the Peony season is by using first of all in the Chinese *Promis* themselves, both the very early varieties and the very late varieties and then taking on the Tree Peonies and the *Officinalis* varieties which, when they come before the Tree Peonies, and then you will be able to get a Peony season about six weeks long every year.

There is a new group which has just come into our gardens in recent years, which is exceedingly precious. There are but few varieties, but those are of the highest beauty. It is a species of

Peony discovered in the Caucasus, called *P. Wittmanniana*. That species has been used as the pollen parent by the great hybridizer Lemoine in Nancy. He has taken pollen from *Wittmanniana*, crossing that very early species with later flowering sorts, and has produced a race of hybrids very much like the male parent—very early flowers, foliage of the male parent, but the species *Wittmanniana* is white and the crossing with the Chinese blood has given us progeny which vary in color.

There is a curious story in connection with this group. In 1882 a famous French priest traveling in south-western China discovered a plant in seed, which looked as though it had something of the character of the Peony plant. He sent seeds home to Paris where they were planted. It grew to be a Peony sure enough, and was found to be a bright yellow flowered Peony. This was named *Lutea*; it was two inches across and as bright yellow as a butter cup, with delicious fragrance more like a Lily—exceedingly sweet and very agreeable. Now *Lutea* is a shrubby Peony, like the Chinese Tree Peonies, and Lemoine made crosses between *Lutea* and Tree Peonies, and has introduced into commerce some two or three varieties which are large double yellow Peonies—big as this and bright yellow, magnificent and extraordinary looking things. You would say somebody had dyed it. They don't need to, because they come that way naturally. In Paris dyed flowers are offered in commerce. There are gorgeous orange colored Peonies in French flower shops, and orange blossoms in abundance all the year round.

This cross of the Peony *Lutea* with the Chinese Tree Peony is a cross easily made, and you are likely to get occasionally a well developed seed. When I first began to make that cross I was more than delighted. I crossed from the Chinese Peony with the *Lutea* plant, and the pods grew bigger and bigger. Evidently they were filled with seed. I said, "I have got it this time." When autumn came I planted them in the soil. The next year I made more crosses. The second spring there was nothing, nor the following spring. One autumn when I had one of these big seeds in my hand I burst, and there was nothing in it. The problem which has always interested me is what is the nature of that act of fertilization, because a Peony plant that is unfertilized does not develop seed pods, but these pods grow all summer and are filled with enormous glittering black seeds, and those seeds are nothing but a covering. They have no contents. I should

like to know what the process is which leads to the development of everything that the individual—of the appearance but not its contents.

You may decide that you would like to cross a Japanese Peony—one of the Japanese type into one of these forms that are what we should call double. Well, the statement has been transformed into broad seed colored petals. There are no statements here, and we can't make the cross without pollen. Here's a trick. You will seed, but those long transformed stems are still seeded and yellowish at the tips, and if you take a knife and just slit along that little yellow swelling you will get a little pollen on the knife. This pollen becomes available to the plant because the petals never harden, but it still carries a little bit of pollen. This is the way we get the pollen out of the Japanese varieties for purposes of hybridization.

PRUNING SHRUBS

Most of the spring flowering shrubs have now lost their flowers and can be pruned safely. It is best to do late spring pruning is necessary immediately after the blooming season, as most of these shrubs start in a few weeks to make their buds for next year, so that late pruning is certain to result in considerable loss. The proper way to prune these shrubs is to cut out the very old and the weak wood close to the ground so that a place is made for the new growth.

Perennials need especially hard cutting, many of the heavier kinds being removed. It is on the newer branches that the best flowers come. Some cutting back of long and straggling branches on all shrubs can be made to keep the plants symmetrical, but any such light trimming is only a temporary expedient.

TRANSPLANTING PYRETHRUMS

Pyrethrums or Painted Daisies seem to have a somewhat different habit of growth from most of the perennials. Experience has shown that the results are not satisfactory when they are divided or transplanted late in the Fall. Such work can be done very early in the Spring, but even then the plants do not respond as well as when they are handled in the Summer. There is no better time for working with Pyrethrums than late August. As a matter of fact, however, Pyrethrums can be transplanted at any time in summer, even when they are in bloom, if a generous amount of earth is taken with the roots. This does not mean, of course, that they

Review of the 1925 Peony Rating (9.0 Average or better)

BY T. F. DONAHUE, (In Bulletin of the Am. Peony Soc.)

IN CHECKING up all the double herbaceous Peonies voted upon in the 1925 Symposium of the American Peony Society, the writer finds but three varieties advanced to the 9.0 or better class that had been voted upon by the members in the symposium of 1921. These varieties (to be commented upon later in this review) are all of foreign introduction, and this point should be emphasized so that the breeders in this country introducing new varieties will consider such before rating their pet varieties: B.3-9.5, etc., i. e., *White Sunset* 9.5; grade 8.5, 1925; 4 votes, grade 3.1, 1921. No American variety advanced in or into the nine class.

It is the writer's opinion that no Peony should receive a rating in the symposium of the American Peony Society unless it has been grown in the member's garden at least three years and ten voters constitute the minimum. This would eliminate freak ratings, allowing the uninformed some leeway in selecting only the very finest.

The new varieties to make their initial appearance in the 9.0 column are *Jessie*, *Sage*, *de Louis Digoit* and *Phyllis Kelway*. *Jessie* (Dessart 1918) scored the greatest advance, coming up from 8.9 average with 9 votes to 9.2 class in 1925 with 18 voting, showing conclusively that with double the voters registering, it won be wholly an superlative merit. This variety is without a doubt the par excellence for a late, light yellow

distinct shade of rich, salmon pink with silvery lights; extra fine midribbons.

Phyllis Kelway (Kelway 1908). Note the year. Why all this time getting into the 9.0 class? It averaged 8.5 with 16 votes in 1921 to 9.0 with 22 voting in 1925, showing decisively that values count eventually. This is a popular variety with the ladies and I am inclined to think they voted it into the 9.0 class. You may compare it to delicate, flushed pink crests de chine, with a freshness of charming effect. Strong, erect stems, fragrant, late, and a good keeper and a popular exhibition favorite.

The writer is pleased to see this trio in the nine class and is looking forward to the next symposium when a few more of his favorites, especially *Kelway's Tree Queen* 8.8, *Auguste Dessart* 8.7, *White Lockwood* 8.8 and *La Perle* 8.5 will join the ranks of 9.0 or better class where they justly belong.

The reader will notice no gains occurred in the nine class from 1921 to 1925 when the varieties became widely distributed and were recorded in the 8.6 class.

Mrs. Edward Harding (1918) 9.3 still made us his highest rated variety, and it deserves this high rank, in spite of all the "lashing" it has received. This variety received the *Mrs. Edward Harding* prize at the Cleveland show in 1918 where it was shown in perfect form, regardless of the heat and transportation, which is a great factor in getting fine

SHAYLON'S VARIETIES (NINE OR BETTER CLASS ONLY)

Variety	Year	Voting 1921	Voting 1925
Corolla Shagun	(1917)	11 votes, 8.6	4 votes, 9.0
Mary Woodbury Shagun	(1918)	20 "	14 "
Mrs. Edward Harding	(1918)	21 "	18 "
Rose Shagun	(1918)	22 "	18 "
Bernadette Jessie	(1918)	18 "	8 "

*Rated for the first time.

ender pink and white double Peony with salmon tints at the base of petals. This variety is destined to become even higher rated when the show and blooming dates come simultaneously.

Sage, *de Louis Digoit* (Dessart 1912) the second of the new ones glided nicely to a 9.1 average with 22 voters registering their approval from an average of 8.8 in 1921. It voting. It seems rather strange that this variety and *Phyllis Kelway* received the same number of votes in 1921 and 1925 with *Sage*, *de Louis Digoit* the favorite by a wide margin. This variety has very large blooms of a very

THURLOW'S VARIETIES ARE CLASSED AS FOLLOWS

		1900	1902
A. P. Saunders	(1919)	12 votes, 8.9	4 votes, 9.0
A. C. Shaw	(1919)	12 "	4 "
James Boyd	(1919)	12 "	4 "
James H. Mann	(1919)	12 "	4 "
Katherine Haeuser	(1919)	12 "	4 "
Nymphs	(1919)	12 "	4 "
William	(1919)	12 "	4 "
Frank R. Thurlow	(1919)	12 "	4 "
Thomas C. Wicks	(1919)	12 "	4 "

*Rated for the first time.

*Rated for the first time.

American Collection sent to France by A. H.

Paul Fischer Mrs. Munt - James Richardson
Annette Allen Mrs. Shapley - Nymphs Karl Rosenfeld
Pride of Essex Walter Taylor Grandiflora
K. Haeuser Mrs. Hagen Frances Willard
Kelan Mrs. Borden Mrs. O'Brien

From Poplar Garden

PAEONIES TO PLANT NOW

TO bloom during early summer there is an herbaceous plant that can surpass the Peony. The herbaceous Peonies may be divided into two classes: the May-blooming varieties and the June-blooming varieties of Chinese Peony, as represented in the Coloured Plate given away with this week's issue. The blooms are ideal for cut flower purposes, and remain fresh in water for a long time.

The Peony is not difficult to grow in any position or soil so long as it has some shelter from north and east winds, and the soil is out of a shallow and hungry nature. It may be grown in a border, or at the edge of a shrubbery, not too near large trees, which will rob the plants of nutriment. Dig the beds at least 2 feet deep and, if possible, add a good supply of cow manure to the bottom soil, so this encourages the roots to go down to seek for nutriment.

The end of September and the early part of October is the best time to plant Peonies. They become well established before winter sets in, and grow well the following spring. Great results must not be expected the first or second year, as it is usual for plants to grow three or four years before they commence to flower freely. To prevent the ground from re-

maining bare for this length of time, the surface soil may be planted with Pansies, Violas, Saxifrages and other shallow-rooted plants.

Once a bed of Peonies is planted, it may be left undisturbed for ten or twelve years, or even longer, if the roots are well fed. The plants should be set out 3 feet apart, and if the soil is apt to become dry during summer, plant them in saucer-shaped hollows. The roots should be spread out their entire length and, if they need it, should be given a thorough soaking of water. A few handfuls of sand or very fine soil should also be scattered over the fibrous roots before returning the soil, which should be broken up as fine as possible. The crown of the plant should be kept about 1 inch below the surface, and the soil made firm round the roots.

You must give the young shoots some protection from late frosts as soon as they spring through the ground. Some dry litter, such as straw or even pine, is suitable. This can be shaken up about the young stems.

To add to the beautiful varieties of double Chinese Peonies shown in the Coloured Plate, there are La-Talipe, soft pink; Lord Derby, dark red; Duchess of Teck, creamy white, entire carmine-red; and Lady Bessford, soft blush-pink.

W. E. Wright.



now is an excellent time to plant Peonies—the illustration shows one of the numerous double varieties

Calcutta, N. Y.
August, 1924

THE FLOWER GROWER

Class 7. Six specimen blooms, double, one variety. Thirty-five entries.
First. Little with Enchantress.
Second. Riverview Gardens with Moss. Martin Cakuzac, Jubilee was also well shown. Note the competition in this and the next class.

Class 8. One specimen bloom, double, representing the best bloom at the show. Twenty-one entries.
First. Little with a Milton Hill full ten inches in diameter. It was one of those "ain't no such animals" affairs which had to be believed because it stood before our very eyes.

Second. Judge L. A. Vorles, St. Joseph, Mo., with his new seedling Nancy Dolman which won other honors in Classes 16 and 38. Miss Nina Secor, Forest City, Ia., showed a very fine bloom of the magnificent white originated by her father, now deceased, and named Nina Secor in her honor.

Class 9. Collection of seven blooms best representing types of bloom.
First. Edw. Auten, Jr., Princeville, Ill., with the following: single, Darkness, Japanese, Fajano; Anemone, a salmon-tinted seedling; rose, Therese; semi-double, Mon. de Cakuzac; crown, Gloire de Chas. Gombault; bomb, Augustin d'Haut.
Second. H. P. Saus with his own seedlings.

Class 10. Collection Japs, one bloom each. Thirty entries.
First. W. W. Cook, Clinton, Iowa, including an all red seedling of his own which looks to be one of the very highest quality.

Second. Auten, with a small seedling which included one pink seedling of his own.

Class 11. Collection of Singles, one bloom of each. Two entries.
First. Bonnevitz; second. Cook. This class was inferior to the display of singles at the St. Paul show.

Class 12. Collection Tree Peonies.
B. H. Farr, Wyomissing, Pa., showed blooms of the double yellow Lutes-Moutan hybrid Souvenir du Marquis Cornu, and received special mention for this most unique variety. It is a Peony, without a doubt, and yellow, but reminds me more than anything else of an orange colored decorative type of Dubila.

Class 13. Collection early flowering species and hybrids. Two entries.

First. G. B. Babcock, Jamestown, N. Y., with Official varieties Rubra, Rosa and Alba.
Second to Glascock, Joliet, Ill., who also received special mention for Official-Chinensis hybrids.

Class 14. Collection new varieties introduced after 1905.

No First. Little showed about ninety kinds and would have won first, but in the haste of setting up the exhibit entered some kinds of earlier introduction. It was a fine display, especially good being Sarah K. Ther-

low, Rose Gumm, Henry Avery, Golden Dawn (Gumm's new yellow), Rosa Bonheur, James Boyd, Nymphosa and Raoul Dessert.

Second to Ronewitz, Mrs. Shaylor Force was good, and there was a fairly good bloom of Bonheur, a variety otherwise not much in evidence.

Class 15. Separate prizes for best individual blooms.

First. Little for La France, Kelly's Queen, fine, Miss Salway, Mont Blanc, Gertrude, Laura Everett, and Venus. No entries for the other kinds, Bayadere, Mod. Emile Dupraz and King of England. This class should bring out the hottest kind of competition, but in order to do so, I believe the Directors of the Peony Society should make out lists for competition, naming varieties at least three years in advance. Then we could tell what years to have our fine varieties under, instead of dividing for increase.



Peony—Frankie Curtis

Class 16. Seedlings.

Were any American fancier of the Peony ever so foolish as to think that all Peony history must of necessity originate across the ocean, a study of the entries in this class would quickly drive that idea out of his head, and it might convince him that old Uncle Sam might even take the lead in introducing new varieties before many years. For while not all new seedlings shown were of highest quality, yet enough good ones were shown to prove that some very real work is being done, and that over a period of years it will yield a total of results which will compare favorably with the old world lists.

Only one special seedling prize was awarded, the J. A. Taylor Prize of \$100.00 (Class 42) going to Judge L. A. Vorles for his Frankie Curtis, a magnificent fragrant white bomb, apparently the long hoped for white Moss Jules Elie. This and his Nancy Dolman, the large full double fragrant pink which took second in Class 8, both received honorable mention as well.

A. M. Brand received honorable mention on a very unique single, a

large nearly white bloom with crinkled petals, and stamens bunched in the center to give a decided Japanese effect, though the stamens are not transformed.

H. P. Saus made an impressive display of his seedlings, and I feel sure that his work will stand out more and more in the next few years as an originator of both Peonies and Iris of highest quality. He received a First Class Certificate on his Florence Macbeth, which may be easily described as a large, flat Tourangelle. His No. 48 is a fine pink, lighter and more ethereal than Walter Faxon. No. 46 was poorly shown, but from bloom to my own garden this year I know it to be a very fine full double fragrant deep pink with stiff stem. The second day he brought in three more very fine seedlings, two of them being first blooms from plants still in seed bed, a very fine white and a pale pink.

Yu. Smiley, Grinnell, Ia., showed a whole lot of seedlings, and received an honorable mention on at least one variety, No. 37, a high-built, uniform light pink, which attracted much favorable comment, also; if my notes are correct, on No. 38, a medium pink with crown. Edw. Auten Jr. received honorable mention on his No. 11-15, a late flat bloom, many stamens interspersed, usually one on a stem, stem very erect, medium height and size, but very sure to open, pink with whitish cast, splendid carmine, sometimes forming a hollow ball until flower is fully opened.

Classes 17 and 18, handle baskets, Peonies main feature.
First to Mrs. G. B. Hippee, Des Moines.

Class 19. Vase, Peonies main feature.

First. Margaret O'Donnell, Des Moines; second, Mrs. G. B. Hippee. These mixed bouquets were very elaborate and much admired, but I fear I can never bring myself to like a mixture of deep pink Peonies with several shades of blue and purple Delphinium in the same dish. In fact, were I forced to use blue Delphinium I would add only white Peonies, and also I am just enough of a Peony specialist to enjoy Peonies most when they are arranged by themselves. Different varieties give wonderful opportunities for color effects.

ADVANCED AMATEUR CLASSES

Class 20. Fifty varieties, named, double, one bloom of each. Four entries.

First. Cook, Enchantress, Mile, Leonie Calot and Milton Hill were very fine.

Second, Miss Chamberlain, Des Moines, whose exhibit contained a fine Opal.

Third, Auten.

Class 21.

First prize to Auten for best two blooms of Solange, Therese and Wal-



The Peony

Seed-Bearing Varieties of Peonies

BY EDWARD AUTEN, JR.

IN THE February number of THE FLOWER GROWER is an inquiry for a list of the better varieties of Peonies that set seed freely.

All of the single varieties, being very similar in flower structure to the Peony in its wild form, set seed very freely—one bloom often producing from 40 to 75 seeds. If all our single Peonies had come from parents close to the wild species, most of their seedlings would also be single, and there would be little to be gained in planting seed from singles unless one desired to obtain only new single varieties. One grower is so enamored of the singles and the Japs (the form nearest to the singles) that he plants seed only from these two types, but his case is very unusual.

If, however, a single is a seedling of double parents, a larger percentage of its seedlings will come double. Mrs. Sarah Voss, who was the first American to develop new varieties, used seed only of the single white variety *The Queen*, Kelway. (not Kelway's *Queen*, a double kind) and from less than 1500 seedlings obtained many double kinds, in many colors, some of which have made her world famous. *The Queen* must undoubtedly have come from a strain of doubles.

All Peonies of Japanese type produce seed; but those which display the different plant characteristics as shown in the varieties developed by the Japanese, have very large seed pods, large seeds, and very few of them in a pod. Fine varieties are *Joan-Giddi*, *Torn-n-maki* and *Selva-sunae*—white; *Amoussade*, *Tokio* and *Tamatoko*—pink, similar in several respects; *Aureola* another pink; *Mikado*, red, and *King of England* and *Edward VII*, somewhat similar to *Mikado*, some *Ganeko* and *Fugajo*—very dark reds.

ANYONE interested in plant breeding should make a thorough study of the laws of heredity, as time will be saved thereby, and results will average higher than with hit and miss work. This is probably true of the Peony, even though the modern Peony comes to us carrying not a simple strain of hereditary influence, which will breed true in type, but rather a most complex assortment of hereditary tendencies in each variety, the result of previous cross breeding.

One student of heredity has shown on a chart how a starting with two blooms of simple hereditary make-up, say a white flower and a red one, then crossing them, and in-breeding (self-pollinating) some off-

spring and crossing others, it is possible to get a white bloom which will breed on pure white, even though one of its parents was red. And later on, there may come two whites which crossed, can produce only red offspring.

Therefore, if you save seed from named varieties of Peonies, there is slight chance that you will reproduce the parent. A combination of hit and miss planting of seed pollinated by Nature, and of seed carefully hand-pollinated from finest kinds, seems to hold the greatest possible chance of getting something unique as well as high-class. As the stamens and carpels (seed bearing organs) become more and more transformed into petals, and the flower is therefore nearer to the double type, the seed bearing function is necessarily diminished. So the experienced originator seeks seed not from the varieties which "set seed freely," but from the very shy seeders. The results may not justify the effort, but no one can be blamed for trying to get seed from these difficult kinds. It is, of course, possible to obtain full doubles from the semi-double kinds, and it may be that these are often superior to seedlings from the shy seeders. In other words, the free-seeding semi-double may "shoot" an individual progeny far in advance of a more advanced parent which does not give seed so ungrudgingly, and may do this even though the general average of its progeny is not notable.

LET us consider the wonderful pink, *Le Theres*, which stands at the top of all light pinks. It very rarely gives seed. One grower raised a few seedlings from it, but reports they were not worth the effort he spent. I have one seedling of it, obtained after several years of effort, several seeds failing to grow. In 1924 I obtained 26 seeds from 600 blooms, and felt myself most fortunate. (How different from 75 seeds from one bloom of a single variety!) Of these only three or four looked like they would grow, and none of them came up in 1925. The seed pod splits when the seed gets about half size, and the seed then dries up prematurely. Some varieties are so completely double that I believe it will never be possible to obtain seed from them. *Solange* and *Mad. Emile Galle* are examples.

All the semi-doubles have stamens, and many of them have carpels. The anemone-type has carpels but no stamens, and this is usually true of the crown type and bomb type also. Some

of the semi-rose type, which is nearest to the full double, have stamens but no carpels. Such varieties are valuable as a source of pollen, to be transferred to other kinds not so double. Pollen can also be obtained from the yellow swelling along the edge of the narrow center petals of the Japanese varieties, and some doubles (split the petal open with a sharp knife).

Now as to names of varieties to plant, let us start with the whites. If trying for double kinds, no singles

are needed. *Marie Jacquin*, *La Roze*, (poor stems), and *Frances Willard* will all furnish pollen as well as raise seed. I have obtained seed from *Madame Gresser*, *Blanche Cro*, *Cocorone D'Or*, *Mona Du Pont*, (these last two very shy), *Mme. de Verneville*, *Laura Dessert*, *Duchesse de Nemours*, (others report this a very difficult variety to obtain seed from, but I shall have 100 plants from it bloom this year), *Grandiflora Nivea Plena*, (none of this seed ever grew, however), and *Festiva Maxima*. The latter is a shy seeder, but valuable. Last year four *Festiva Maxima* seedlings bloomed. One was a very ugly double red; one, a semi-double, was almost a duplicate of its parent except

in form; one was a very delicate pink single; and the last a full double, soft lavender-pink that looked like something fine. *Le Cygne* is also a shy seeder.

In the pinks, there is endless choice. I have obtained seed from the following kinds: *Umbellata Rosea* (one seedling was very inferior), *Edith Superbe*, *Dulcissima*, *Mona Jules Elia*, (only a few, 74 in one year my record), *Eugenie Verdier*, *Germania Bigot*, *Mad. Duval*, *Virginia*, *Ottavia*

Demag, *Gloire de Chas. Gouhaud*, *Marie Grosse*, (very fine, and very fine), *Mad. Calot*, *La Tulle*, *Marselle Dessert*, *Walter Faxon*, *Lady A. Duff*, and many others.

IN THE reds, it is easier to name those which will not seed. We have not yet developed a perfect red, most of them are semi-double, and so are objectionable for commercial cut flower use. *Philippe Riviere*, the finest red, will never set seed, and I do not believe Grover Cleveland ever will. It might be called the red *Solange*, and is one of our finest reds, and not half appreciated. I once saw the remains of a suggestion of a seed pod on *Grover Cleveland* that might have

been pollinated, at least I was sorry I had not seen it in time. *Mona Martin*, *Cahuzac*, *Adolphe Rouzeau*, *Schard Carvel*, *Eugenie Bigot*, *Akashien*, *Karl Rosenfeld*, *Augusta D'Honn*, *Felice Grosse* (shy), *Delachoi* and even the old *Fragrance* all have seed.

I doubt whether the *Tenfolda* species will seed, have never obtained any from *Anouka*, but have obtained

a few seeds from the following of the Official kinds: *Habra* (one grower says he got no seed in 80 years), *Rosa*, single red, and *Aureole-flora* (a Japanese type). Official seed besides being difficult to obtain gives a very low percentage of germination, and most of the seeds that do sprout die the first Summer. I have brought only one Official—Chinese hybrid (on *Mad. Duval*) to blooming size, but it changed to be very fine. Also have also other Official seedlings coming on.

I feel that among the hundreds of neglected old varieties lie as great possibilities for the hybridist as with many of the new kinds. They being closer to the original form probably have fewer and therefore stronger hereditary tendencies, and these more likely to appear in distinctive form than from our modern kinds of more complex ancestry. In other words, we may get more worthless "hopeless" blooms from the modern kinds. I may be wrong, however. One should at all times choose seed parents with good plant characteristics, such as stiff stems, vigorous growth, and free-blooming qualities. Substance in petals is also greatly to be desired. If seed is to be saved without hand-pollination, only the finest kinds should be raised. This does not necessarily mean only high-priced kinds, for many of the new kinds, which are high-priced because they are rare, will not outlast some of the older and therefore cheaper kinds.

Clarence W. Hubbard
OWNER OF
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The SINGLE and JAPANESE PEONIES

By FRANKLIN B. MEAD

Illustrated with Color Drawings of Subjects from the Author's Garden by J. MARION SMITH.

"Honey and earth are flowers,
And as well as Rudolfs are flowers,
The heart of man is also the root of flowers."

A HORTICULTURAL writer has somewhere attributed to Mæterlinck the epithet "apoplectic" for the sometimes lumpy double herbaceous peony. This article, however, is no brief against the gorgeous flower that dominates the early June garden with its great globes of satin lustre through all shades of cream and white and pink to the deepest red, but is one in praise of the single and Japanese peonies and of some of the peony species and their hybrids which have not yet attained the station in the gardens of America which their grace and beauty deserve.

A search of the inimitable writer of bees and flowers fails to disclose the epithet referred to, but in "Old Fashioned Flowers" may be found this characteristic passage, "The peonies, who have drunk their imprudent fill of the sun, burst with enthusiasm and bend forward to meet the coming apoplexy." The splendor of the peony is thus of the earth, more material than that of the iris, whose evanescent beauty is that of the sea and sky, whereas the beauty of the peony betokens earthly luxury. In China, where it has been cultivated from the earliest times, it is regarded as the rich man's flower, and after its introduction from China into Japan in the eighth century it was regarded as the king of flowers, a companion in art with the lion and the peacock, the kings of the animal world. In decoration of palace or temple the three are always painted together, and when lions dance on the Japanese stage they always have a gorgeous background of peonies.

The Chinese have a fondness for the single peony, whether of the herbaceous or tree peony type, as have the English, while the particular Japanese artistic sense has craved the type which has been designated "Japanese." The original peony species found in the wild are single, that is they have a single row of petals surrounding a mass of yellow stamens, with the seed bearing carpels, often brilliantly colored, in the center. In the Japanese type, too, there is only a single row of petals, but the doubling process has just begun; the filaments to which the anthers are attached have broadened and the anthers have become very large, even shaggy and often variegated in color; the flower has developed that character and appearance which we designate as "Jappy."

Numbered peony species are native to

southern Europe, central China, and Siberia. There is one, *P. brevistylis*, twelve to eighteen inches high with columbine-like leaves, which is endemic to the western slope of the Rockies, particularly in California, from near the sea level up to nearly the snow line. The most important of all peony species, from the hybridizer's point of view, is *P. albiflora* (white flowered) which is native to central China and Siberia, sometimes called *P. sinensis* or Chinese peony. The modern peony gets its greatest infusion from this species and to some extent from *P. officinalis*, which is native to southeastern Europe, with the incidental use of a few of the other species. *P. albiflora* was introduced into Europe in the seventeenth century, but has been prominent in China from the earliest times. *Officinalis*, toward the close of the eighteenth century, was first introduced into China, where the early hybridizing was carried on most extensively. In the middle of the nineteenth century a number of the best Chinese peonies were shipped into France, but quite a few of the early albiflora hybrids were imported into England from China early in the nineteenth century. It was after these importations that the development of the modern double herbaceous peony was begun in France and England.

Single peony species and their immediate single hybrids possess considerable individuality, with great diversity of foliage and habit of growth; some have large and poppy-like flowers and others are like water lilies. Many of them are dwarf and bushy, not more than eight to fifteen inches in height, and, as they are native to rocky slopes, they make capital subjects for the rock garden, where they have a charm and grace not attained by those "bloated beauties," their cousins of the border. They are also valuable for woodland planting, for they will thrive under large trees. Furthermore, they flower from two to five weeks earlier and thus extend the period of bloom for the peony devotee.

The rare Peony *Mikourenschikii*, a "pleasant little assortment of syllables" after the fashion of the name of its Slavic discoverer in the wilds of the Caucasus, is the first to unfold close to the ground its leaves of red, coppery bronze; these change chameleon-wise, as the surrounding vegetation advances, to a bronzy green, like the varicolored alloy of some Japanese bronze workers. This work of the Great Artist is said to support huge water-lily-like blooms of delicate white and green, which the past



Michu



Corolla



Rust-Major



E. St. Hill



Peregrina



Flashlight



Triumata



Diana



Bakeri



L'Esmeralde

A comparative study of the Japanese peonies, Tamatbako and Tokio.

With the rise of the Japanese type of peony to popularity it becomes very evident that there is as much, if not more, confusion among them than existed among the other types before the Peony Society took hold of the nomenclature problem. This confusion of ^{is} the most noticeable among the varieties which originated in Japan, and has been brought about mostly by the frequent importations from that country, of collections by various individuals or firms. These importations have borne Japanese names, and in many instances these have been discarded and English names substituted.

This would not have caused much trouble if every collection so renamed had been distinct from previous importations. But this has not been the case and we often find the same variety masquerading under quite a variety of names. The Japanese nurserymen also are at fault, for it is seldom that the same variety can be imported twice under the same Japanese name.

The popularity of this class is certainly on the increase and the Society is sure to find itself confronted with another nomenclature problem. This study is offered with the idea of showing a way in which some of the confusion can be straightened out.

These two varieties seem to have been offered first by Dessert and undoubtedly were imported by him direct from Japan. However this may be it is a fact that Tokio is largely sold under the name Tamatbako.

While it is a very good flower and bears a close resemblance to that variety, it is much inferior to the latter.

The following analysis was made from plants of the two varieties growing side by side.

inclement seasons have rendered abortive in the writer's garden, has also bent the case with the delicate primrose-yellow of Wirtmanniana, an upstanding species also from the Caucasus and north Persia.

Early in the first week of May peony Corsica, from the cliffs of Napoleon's youth, opens its blooms of deep rose. Its beauty of size and daintiness of leaf are well depicted by the artist. Note its unique center with the red topped carpels like pelicans in their nest.

A host of other species and their hybrids follow Corsica into the middle of May: arietina, from the Levant; Bakeri, deep vivid rose with heavy gold stamens; paradoxa, mallow purple shaded brighter and deeper; peregrina, deep rose; triternata, and many others. They differ in habit and foliage, and in arrangement of stamens; some have woolly carpels tipped red and some are tipped pink, subtle differences dear to the "eye of minute love." Broteri, a native of the

peony species. Officinalis Chamer has lovely rose-cerise flowers of perfect form; arietina Northern Glory has flowers of soft rose pink with a beautiful bluish tinge and soft pea-green foliage; arietina Ex-celsior has large showy flowers of brilliant rose. No pen, however gifted, could depict the brilliant beauty of the ray scarlet of officinalis Ophia with its fluttering stamens of purest gold intermingled with gorgeous rose, and its woolly, creamy, salmon-tipped carpels; nor that of the somewhat similar officinalis Lucida with its cup-shaped flowers of the most vivid scarlet with stamens of old gold striped red, both as well represented by the skill of the sympathetic artist. But the supreme despair in officinalis Lobata, which fairly tortures the mind with its exquisite memory. Its waxy cups of deepest and richest coral-rose meet the coming apoplexy so speedily from the torrid winds of last season that shipment to the artist was prevented, which has been a matter of never-ceasing regret. The origin of this marvel is almost lost in obscurity; it is supposed to be the product



A close-up of the single peony Marguerite Desart, showing its gracefulness of form

mountains and sub-alpine regions of Spain and Portugal, has leaves of glittering green. The rare Veitchii from western China has fine, leathery foliage of pale green, prettily divided, their drooping mass affording a most picturesque effect in the rock garden. The graceful triternata, another native of the Caucasus, was brought from England into France in 1810 for the Empress Josephine at La Malmaison. Near Paris where, after her divorce from Napoleon in 1804, she lived a life of retirement, surrounding herself with curios and rare plants and flowers. Russi Major, a hybrid between Russi, a Corsican species, and Wirtmanniana, is most distinctive in stem and foliage, the reverse of the revolute leaves being beautifully tinted in buff and pink. Emodi, from the Himalayas, is a rare and beautiful species with pure white flowers of satiny texture and soft green foliage, glaucous gray beneath. Macrophylla has the most magnificent leaves of all and big blossoms of soft yellow. Woodwardiana is one of the most beautiful and the rarest of all, as it exists in but one garden in England, Warley Place, where Miss Willmott has brought woodland, stream, marsh, rocky dell, orchard, and border to the highest development. It is the hope of the writer to exhibit this with many others at the National Peony Show in Fort Wayne next June.

Numerous hybrids multiply this splendid array. Many of them were developed by Peter Barr, who was an indelible collector of

of a Frenchman named Desboutain, although it is known that it was first received in England from the Royal Gardens in Paris by a Mr. Alexander Maclean, in whose garden it flowered in 1821. But the treasure of treasures is the lobata variety Sunbeam, which has not yet displayed its "cerise-salmon" cups in the writer's garden; it has been minutely described by Reginald Farrer as "blossoms of a perfectly pure crimson-scarlet which in the sunshine seem positively incandescent, luminous as globular lighted lamps of blood with a golden heart."

Lemoine, by crossing albiflora with Wirtmanniana, has produced some beautiful hybrids which prolong the season of the early peony into mid-May. These have charming foliage of light bronze green with red-tinged stems. Two of these are shown here, Avante Garde, crinkled satiny pink, and Le Printemps, deep cream with a rosy flush.

The grace of the single peony begins with the early border peonies. They have a certain charm not possessed by the double varieties. They are wonderful subjects for landscaping, as their beautiful colors are always held erect, and they are especially picturesque by the water side.

The one most frequently seen in albiflora The Bride (syn. La France) which is a very early bloomer, has been surpassed in habit



For beauty and symmetry of hubis
Marguerite Desiree is unsurpassed



Pioneer and iris in early June, the brilliant
Japanese peony Flashlight in the foreground

quality by more recent varieties. The best white is the American variety Le Jout, remarkable in substance and finish, with petals as white as the Alpine snow and beautiful carrels of vivid carmine-rose.

The most beautiful in color and symmetry of form is Marguerite Desiree—like a trim, well-mannered girl of good birth, good taste, and good health. The descriptions in catalogues never do justice to this variety, just—large single flower pure white, powdered with splashed carmine, center of golden stamens.

As gardeners we are not primarily interested in the means to the end. In effect Marguerite Desiree is clear, melt-white with the most delicate flush of life which deepens to an unbecoming blush, for Marguerite is a well-nurtured den with never an unkindly contact of body or

it. Here are a number of beautiful pink single petals, the best of which have been well portrayed by the artist. Helen, an immensely large and beautiful pink of great substance, an American variety which blooms with earliest border variety. Madeleine Gauthier, the rose Kelway maezeca, Nellie, large, fading to deep cream center, and Pride of

forgetten-peace blossom pink of heavy waxy substance. E. St. Hill is a splendid rose-pink, entirely different in tone from the others.

The well named L'Etincelante, brilliant carmine, is one of the best landscape varieties, for it has exceptional carrying qualities with stems that defy the most dashing rains.

The one that has the most individuality in color is Kelway's Gorgeous, of an indescribable tone of deepest rose, shaded still deeper to the margins—Tyrian pink, perhaps, but assuredly no mollusk of ancient Phoenicia ever afforded a richer pigment.

Passing to the deeper shades we have still a splendid procession to illuminate the landscape: King Albert, bright softness; Mafeking, still deeper, claimed to be the brightest of all; and Vera, the Indiana producer of Mr. Gumm, darkest of all, a rich Bordeaux, darker even than Mons. Martin Canuzac, which is the darkest of all double peonies.

The spirit of Nippon is brought to our gardens by the character and form of the Japanese peony; no flower is of a beauty more sumptuous and rich than these. The best of the white Japanese peonies is Tsami-jishi (corrupted in the late to Tsami-Gidui). The Japanese have a wonderful knack in dealing with names which is well



Peony and iris time at Irivirec, the garden of the author

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EDWARD L. FARRINGTON, Editor

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A Course of Study in Garden Design

It is announced that a course of study in garden design will be given at Horticultural Hall, Boston, on Mondays in April. The course will be conducted by Mr. Bradford Williams, landscape architect. The first session will be held at 11 A. M. on Monday, April 9. Those wishing to enroll should notify the secretary, E. L. Farrington, Horticultural Hall, Boston. There will be no charge to members of the Massachusetts Horticultural Society, but non-members will pay a fee of 50 cents at each session.

Coming Lecture in Philadelphia

The Pennsylvania Horticultural Society announces a lecture by Mr. Harold G. Mattson, on "The Care of Shade and Ornamental Trees," on Monday, March 26, 1928, at 3 P. M., in the Auditorium, 1600 Arch Street, Philadelphia, Pa.

New Strain of Hybrid Peonies

It is now eleven years since I began to work on the production of hybrids between the ordinary Chinese peonies and the varieties of P. officinalis. The first blooms were produced in 1924 and since then each year has brought a new group to maturity. This strain is now sufficiently well established so that it may be of interest to discuss some of its characters.

The seedlings which have so far come into bloom with me are these:

Four hybrids using pollen of a single officinalis variety on the single white Chinese peony *The Bride*. These are all single crimson.

Thirty-one hybrids using pollen of a single officinalis variety on double white or yellowish Chinese peonies (*Primevere*, *Fuji Mine* a white *Jap.*, and a third plant a seedling of the type of *Primevere*). These are also without exception single crimson.

Seven hybrids using sinensis pollen (probably mixed pollen from double and single sorts) on *Officinalis rubra* plants. All these seven are full doubles, six of them double crimson and the seventh a double pink.

One hybrid using pollen of sinensis on a single officinalis. This proved to be a very small almost black flowered single.

It is a curious fact that the character of doubleness or singleness is apparently determined by the officinalis parent in every case. Also, that except for the one case of a double pink in the third group, the officinalis parent determines the color.

With respect to the general habit of the plants, the female parent seems to have most to say. All of the 35 hybrids in the first and second groups are tall plants, quite as tall as the average Chinese peony and much taller than their officinalis parent. Two of them, of which I happen to have measurements, showed a height of 33 and 40 inches respectively, while the two officinalis varieties *Rosa plena* and *striata*

elegans measured on the same day, had only 26 inch stems; and the effective difference is much larger than these figures indicate, since the officinalis varieties have a sprawling habit, and the actual stature of the plants was not by any means equal to the length of the stem, whereas the hybrids, having thick, stiff, straight stems have an effective height as great as the actual stem length.

In the third group the plants are variable in stature, some being quite dwarf, others very tall.

The foliage is in general intermediate, but inclines rather to the officinalis than to the sinensis parentage; it is usually coarser than that of the officinalis varieties.

In blooming time these plants come with officinalis, but they have longer duration and the height of their season laps over into the beginning of the sinensis season. Some, indeed, go on longer, for in 1927 I cut a bloom of one of the double hybrids on July 12. The year 1927 was, it is true, a very late year; but the Chinese peonies were in full bloom here before July 1, and very few of them were still hanging on as late the 12th. This hybrid strain in that year had a total season of more than a month, for the first recorded bloom was on June 10.

The real question, however, for the peony fancier is as to the actual beauty and value of these hybrids. My opinion is that for the garden they will certainly prove an important addition. As cut flowers for the house, the singles have great beauty, but whether they would have any commercial value in that way I am not so sure; it may well be that some of the double form would better meet the exacting demands of the cut flower trade.

The striking individuals so far in this race are the singles on account of their stature, size, and color. At their best they are immense, upstanding, cup-shaped blooms of the most intense glowing and vivid crimson color with a very effective group of stamens sometimes striped with red. A measurement gave eight inches for the diameter of one of the larger blooms, and on the largest of all nine and one-half inches, but many are smaller. The best of them, and especially those which lean towards the dark mahogany shades, hold their color extremely well until the petals fall, but some unfortunately show a tendency to go off towards the end into inferior purplish tints.

The entire strain is Steele both as to its pollen and also as to its ability to set seed, although most of the singles form immense furry seedpods capacious enough to hold a heavy crop of seeds if there were such. This sterility no doubt adds to the length of life of the individual blooms and it is true that they last extremely well.

It is strange that this cross was not made long ago, for it is not one that offers any particular difficulty, although the yield of seeds is always small. I have been told that hybrids of this strain have been produced in Holland but I cannot vouch for the truth of the statement.

In this country there have been several growers who have worked on it besides myself during recent years and the beginnings must have been made at almost the same date by all, and quite independently. The first to stage any blooms at an exhibition was Mr. Lyman D. Gleason of Joliet, Illinois who showed a bloom of such a hybrid at the peony show in Des Moines in 1924. Since then they have appeared at several of the Peony Society's exhibitions. Mr. W. S. Rockwell of Pittsburgh, Pa., Mr. Edward Auton, Jr. of Peñacville, Ill., and Mr. A. E. Kunder of Gladstone, Ind., in Goshen, Indiana, have all achieved success with this cross, and Mr. Kunder promises to put two of his single varieties on the market in the present year.

I shall if possible stage some blooms of this interesting strain of plants at the peony show in Boston the coming spring, although I cannot vouch that they will look as well on the exhibition tables as they do in full sunlight in the garden.

Clifton N. Y.

A. P. Saunders

Propagation of Peonies by
Banking Up and Budding—
Effects of Deep Planting

In THE FLOWER GROWER, a year or so ago, there appeared an article on propagating Peonies rapidly by means of placing a form around the plant and filling this form with soil. Some time later someone else challenged this method, on the grounds that it would not produce as strong plants as regular divisions. I have never tried the method of propagation described, but I have had the following experience:

In September, 1925, I was my pleasure (or disposition) to divide and divide several Peony plants that had not been divided for twenty years or more. However, these plants had been moved, (the whole clump) and not divided at all, about ten years before this time. They were taken up when they were doing wonderfully well in the way of blooms and were left out of ground from August until the following Spring. This alone would be enough to ruin it not kill

any ordinary plant, but merely goes to show the extraordinary resilience of the Peony. That Spring they were planted, the yard having been arranged to suit, in very good soil. However, they were planted at least six inches deep; and, as I said before, without dividing. These three things were enough to ruin the plants, but yet the owner wondered why the plants did not bloom. And the strange part of it is that they did bloom, each large clump producing three or four rather small blooms.

Then the owner decided that they should be divided and I was given the job. Upon digging them, I found just as Miss E. R. H., (in Questions and Answers Department) did: That the eyes were nearly all produced on the stems some two or three inches above the main crown. Now what I am trying to get at is, how does the method of propagating by hilling up differ essentially with deep planting which has so long been argued against? The eyes are formed on the stems, exactly as they are supposed to do in the banking up method. But these eyes were small and weak.

This season's divisions from these roots grew but the growth was not strong and healthy as it should have been. And I believe that deep planting was the reason. Let's have the opinions of others on the subject before it is dropped. Has anyone tried the new method of propagation with success?

In a letter to me recently, a friend asked concerning budding as a method of propagating higher priced Peonies. He said he has tried it with the same variety and that they invariably grew. Why could not buds of the higher priced kinds be grafted on the roots of cheap ones of which anyone has plenty? Or, as there are usually some roots and some eyes that are detached, why, in expensive varieties, could we not graft them together instead of mourning the loss of several good divisions?

If someone has had such experience and with good results won't he please tell us about it? And if anyone is sure it can't be done, well we would like to hear it anyway.

G. W. THACKER

PROPAGATING PEONIES BY "JERKING"
Use near-by nursery in propagating Peony plants by "jerkings," as they term it. Just a stalk pulled out like *Kibabur* and planted as they tell me. They also tell me that it is done in August and that they have a long row from last August propagation. Can you tell me how this is done, what sort of a stalk, how in plant, prepare soil, and care?

Propagation of Peonies by "Jerking"

I had never heard of the method of propagating Peonies by jerking up stalks in August and planting it back. As a few eyes and some crown material might come up with the stem, I have no doubt but that Peonies could be increased that way. However, I believe it wasteful of good root material which hastens plant growth, this being left in the original location.

A proper division should consist of two or more eyes on crown material, with roots attached, and I do not believe such divisions can be obtained by jerking up stems. An eye or two attached to crown material alone, on, by good cultivation, and watering in dry times, be made to grow into a regular clump, but it takes from one to three years longer than by using divisions from clumps dug in the regular way.

With expensive varieties the waste would be appalling. With cheap varieties grown for blooms, the old clumps might not be hurt by having some buds removed. This continuing the old plant is the only possible advantage I can see from such a practice, and I believe the disadvantages outweigh it. However, never having tried it, my opinion should not deter anyone from trying it who does not care if he might get poor results.

EDWARD AUSTIN, JR.

August Peonies. Good.

Miss Lulu Jones
Little Peonies - Aug. 1925.
"Franklin's Peonies"
"Voorhees Lady Hale is a"
Chinese flower but too
near Rose Arboreal and
Edwin P. Shaw."
Tamabaco - in very late.
"Richard Carvel Sully this
year. I think it greatly
overestimated"
Mr. Crawford. 16 Feb. '24
"Ermine" as good as Tamabaco
only a week later.
"Gentle" flesh pink.
"Eveline" strawberry pink.
Diocletian. End.

1928.
Shea just proc.
Southern } Jap. Proc.
Alaska }
Madison } Fair to
Rita } Proc.

David Fairchild, that "Gardening leads one into the most fascinating realm of living things... affording a field of intellectual advancement as large as it does a field for the exhibition of artistic taste."

Mrs. Charles H. Stout of Short Hills showed her seedling 'La Dalila' to Golden Saunders, in 1915 at the first show of the Dahlia Society of New Jersey receiving First Prize and the first Garden Magazine Achievement Medal ever offered. She has bred and placed on the market more than twenty varieties of dahlia, giving all the proceeds to the American Red Cross and to the New York League for the Hard of Hearing. Notably, too, among her introductions is the rose pink

April, 1939



Six blackberries as grown by Miss Elizabeth C. White, New Lisbon, the space of twelve ordinary berries

decorative dahlia, Emily D. Renswick, selected and named by the Short Hills Garden Club for their first president. The money derived from the sale of this stock was used to strike the Emily D. Renswick Medal, awarded annually for achievement among the more than six thousand members of the Garden Club of America with representation in nearly half our states.

This medal has been awarded twice to Mrs. Stout herself, once for her book, *The Amateur's Book of the Dahlia*, written in 1928, and two years ago for her Alpine garden and lectures on Alpine flora.

Mrs. Stout has insisted with her own seedlings, in her judging and in her writing that a dahlia must have

a stem strong enough to carry the bloom erect. This has done much to clear flower shows of taller laden with milk bottles encircling a single weakstemed blossom, and to place in our gardens her outstanding varieties that are a great asset in September among the star-works and other plants of diffused growth. For the past few years she has been importing, growing and showing the miniature dahlias (sometimes called Charm). These have captured all beholders, particularly the small, very small pom-pom-budded pink one, adorably named *Pictura*.

Her trophy collection shows some forty medals from Horticultural Societies (Continued on page 62)

cities and various garden clubs including her own. These are certificates—tokens of appreciation for individual work, and a exposure of all silver cups, forty to be exact. She has been made a Fellow of the Royal Horticultural Society, England, and is also much there with her garden at Kew and at Wales as well as with the Royal Botanic Gardens in Edinburgh.

Mrs. Stout is zealous in the importation of rare plants for her Alpine garden and is happy over a recent consignment of dwarf and creeping rhododendrons from the Himalaya Mountains. The leaves are half an inch long at most and the flowers abundantly large and very beautiful. During the summer of 1929, a large addition was made to this garden in a bit of pollards from giant traprock, between which will grow the roset of *Leucostemum*

and other choice things now in her nurseries, but among the rocks on the slope of her place are not less than 1,500 varieties and species.

Her gardens at Short Hills are open to visitors and she gives many lectures there during the growing season to visiting clubs. Opening her gardens "at the convenience of the visitor" is characteristic of Mrs. Stout's generous spirit. No opportunity to help finish her two accepted to show.

At Fairwood, Mrs. Edward Harding maintains one of the finest peony collections in America with lilacs and roses as an additional interest. Her gardens are noted for the perfection of the horticultural methods used and she particularly stresses the importance of learning the fascinating art of propagation and practicing it in our own gardens.

"I love big flowers," confesses Mrs. Harding. This size of her distinguished peonies as well as the size and length of bloom-trusses on the new French lilacs is truly startling. Whether we agree in personal preference for big flowers, we must agree that these particular big flowers are superbly grown by Mrs. Harding, who keeps her collections up to date by securing the best new varieties obtainable. She is also interested in seedlings of peonies and tries and has some fine originations of her own.

In 1917 she wrote *The Book of the Peony*, followed in 1925 by the smaller and less sumptuous *Peonies in the Little Garden*, and she is a contributor to gardening periodicals both English and American.

Always interested in France, the greater part of her collections of peonies, lilacs and roses originated there. The French have given her reported honors culminating in the *l'honneur* in 1928 of the decoration, *Chevalier du Mérite Agricole*, from the Republic of France. This honor is shared by only two other women, Madame Philippe Villermé of France and Miss Ellen Willmott of England.

In June, 1928, the American Peony Society awarded to Mrs. Harding its Gold Medal for work in promoting interest in the peony. She has been conspicuously generous with collections of peonies to Botanic Gardens at home and abroad. These have gone all over the world, from to Africa and India, and attending both Colonel Lindbergh's visit on wings of healing and the tour of President Hoover through South America, at a very

(Continued on page 62)

planted seeds for the
suck
seed
suck (very sticky)
provided very fine
in this elsewhere.

red seeds as follows
of these were kept:
Lady Duff -
Wellington
Aurora
Boule des Reize
Enchantment
Misses
Brenda
Catharine
Vermorelles
A. Rousseau
J. Kellway
Horned Colt (very fine)
Fayre (clear yellow seeds)
to yellow tinged red)
with green pods, which
are painted red. Seeds
are yellow.
(seeds yellow tinged
red.)

RAPID PROPAGATION OF PEONIES

I noticed in Mr. Shaw's article on Peonies in *The Flower Grower* of Nov., 1928, he calls attention to a quick way of propagating the plant, which he claims was discovered about three years ago. The method described is not new, having been in use by various growers for many years. At one of the meetings of the American Peony Society, eight or ten years ago, the practice was the subject of considerable discussion and was criticized very severely. The late Dr. G. R. Harrison, a noted Peony grower of York, Nebraska, was present and took part in the discussion. He thoroughly condemned the practice, claiming that plants produced in that way were blind and the cause of much disappointment to purchasers.

The substance of the discussion may be found in record in the reports of the Society.

There seems to be ample evidence that plants can be produced in that way, the "hitting up process" having been alluded to, occasionally, in a derogatory way, almost from the beginning of the Society, but so far as I know there is no evidence that any one has ever brought plants, so produced, to an actual flowering condition.

If, as it has been claimed, the method produced blind plants, the fact should be proven by actual experiment and the knowledge disseminated.

On the other hand if healthy blooming plants have actually been produced, that fact also should be made known.

Theories are all right so far as they go, but in cases like this they should be supplemented by actual experiment, and the facts established by dispassionate minds from these.

It is very easy to say that plants grown from the little adventitious buds which form on the stems of an old plant, when collected in the treatment mentioned, must be very small and weak to start with and it is fair to suppose that it must take nearly as many years to bring them to the blooming stage as it does a plant produced from seed. If it is so, it may be this which has led many to pronounce fatalism before the plant has had time to grow to the required size and strength to produce flowers.

Someone who has had actual experience and who has brought plants, so produced, to the flowering stage should come forward and make a detailed statement of facts derived from that experience and put at rest for all time this much discussed question.

According to Mr. Shaw's statement the process was new to him about three years ago and it would be interesting to know what observations he has made in regard to it since that time. In other words, can he be sure that he has actually produced flowering plants by that method? Or can he say that he has seen plants, propagated by others, actually in flower, which he positively knows were propagated in that way?

Undoubtedly there are others who have experienced along this line, who could throw more or less light upon the subject if they were so inclined. It has

passed the stage of being a trade secret and it would benefit all concerned if all the facts connected with the process could be collected together and published.

A. H. FARRER

Peony growers who have had experience with the method mentioned, connected in the Shaw article referred to will be doing a task, not only for themselves but for the benefit of those who will be subscribers to *The Flower Grower*. If it is a fact that this method is a method of propagation it is so, but it is not a method of propagation to give in the variety of annual trade, at the method actually used in these cases, propagation and the result, this fact should also be made known.



Vitality of Peony Pollen.

Practical facts and information are not as plentiful as they should be in connection with flower growing, and we are, therefore, glad to know that Prof. A. C. Saunders has in his experiments demonstrated that Peony pollen under favorable conditions may be considered fairly long-lived. Professor Saunders found no difficulty in keeping it through the entire Peony blooming season, thus making it possible to cross the earliest varieties with the latest varieties.

For proper storage Peony pollen is placed in small glass tubes carefully sealed and kept in a dark and cool room. Under these conditions it has been found to retain its vitality during the blooming season as stated.

This information will prove interesting to those who are not acquainted with the longevity of Peony pollen and to those who are undertaking the hybridizing of Peonies for the first time. As before stated it is not often that such information is available. We have no doubt but what other information on the vitality of pollen from other flowers will be available in due time.

A REMEDY FOR "LEMOINE DISEASE"

Mr. Shaw requested me to let you know how we treated the Lemoine disease.

I took little about the disease until after the Peony show at Cleveland. You and several of the members were in the garden checking upon varieties and I remember that some of my Lemoine varieties were not doing well. You told me to dig a couple of plants, and we found them covered with knots and no growth.

I asked what to do with them. Everyone said burn them, but I did not. I dug them in September and planted them in my hospital ground. This piece of ground was new ground I had cleared and plowed the winter before. It was a yellow clay soil, well drained and never had any manure.

When I received from any source any variety that showed Lemoine disease, I put it in the hospital ground. I dug nine Lemoine diseased varieties which made about 180 plants. I cut off all the knots and also all but one or two eyes on a plant. Then I washed each plant clean and dipped it in cyanoacrylate lime and sulphur, washed half and half and dry. Then I planted them, putting one double handful of leaf mold around each plant, not wet, but just moist that you feel in the soil when the leaves have collected for weeks. I see the four leaf mold for planting all plants, not getting any against the tender stock. The ground was kept well cultivated. About the 10th of August I gave the plants some potash. I used it in the morning and was careful not to get it on the leaves. I used the potash the same way about the last of August.

The plants that were made a first growth, and some that were made a second growth, and some that were made a third growth, and some that were made a fourth growth, and some that were made a fifth growth, and some that were made a sixth growth, and some that were made a seventh growth, and some that were made an eighth growth, and some that were made a ninth growth, and some that were made a tenth growth, and some that were made an eleventh growth, and some that were made a twelfth growth, and some that were made a thirteenth growth, and some that were made a fourteenth growth, and some that were made a fifteenth growth, and some that were made a sixteenth growth, and some that were made a seventeenth growth, and some that were made an eighteenth growth, and some that were made a nineteenth growth, and some that were made a twentieth growth, and some that were made a twenty-first growth, and some that were made a twenty-second growth, and some that were made a twenty-third growth, and 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Peonies in the South

Peonies can be grown as successfully in the South as in the North, but they need somewhat different treatment and the varieties must be selected with greater care. Several plant divisions, especially small ones, if it is possible to secure them. The change are worth all the difference in cost.

Varieties to Select

If you are a beginner and desire the best of the cheap varieties, I would suggest the following: *Perice*, *Stamens*, *White*, *Edulis*, *Superba*, *deep pink*, *Marguerite*, *General*, *light pink*, *Fata Cocarde*, *red*, and *Minerva*, *big*. There is an ideal form of *Stamens* grower and a wonderful bloomer. I have counted fifty perfect blooms on one of my plants.

If you desire the very best, regardless of price or where originated, then add to the above list the following, promptly securing the original: *Walter Watson* (Richmond) is the best variety originated in America in my opinion; it does well in Alabama, much better than in more northern sections. *Standard Beauty* and *Welcome Guest* (Hilling) are some of the best and have never disappointed me. *Richard Carter* is the best of all the French varieties for Alabama; in fact, it is the best red I have ever seen in my garden, surpassing in every way *Philippe Riviere* and *Fata Cocarde*. What more can be said?

Camille Verdier, *Monieur Dupont* and *Don de Wellington* are three glorious varieties that never fail and *Calot* never disappoints better. *Amy Gray*, *Monieur Jules* and *La Perle* are my choice of the Chinese varieties to add to *Marguerite Gerard*. *Burgundy Desert* (D.R.M.) is most unique and desirable in every way. *Mme. Jules Deser*, *Monieur Martin*, *Cabrera* and *Therese* are all masterpieces by the artist.

Deser. The one best Peony on earth, in my opinion, is *Therese*. *Le Cygne*, *Mme. Louis Lemoine* and *Forville* (Lemoine) are at the very top, and these three varieties seem to do best in Alabama. The Lemoine varieties are prone to disease and must be watched with great care for the first few years. The *Kelway* varieties all seem to excel in the South, especially *Madame*. *Miss Salway*, *Burgundy*, *Schneider*, *Lady Alexandra Duff*, *Kelway's Glorious* and *Venus*. I consider *Miss Salway* the second best to *Therese* as the ideal Peony for Alabama. *Lady Alexandra Duff* is also a top notcher. *Kelway's Glorious* is a better grower than *Le Cygne*, and if I had to choose between them I would select *Glorious*.

Soil and Planting

The ideal soil is a loam with a red clay subsoil, in hard moisture. Plant on the eyes are not over 1 inch below the soil.

Deep planting is often failure in the South. The reason Peonies should be planted not over 1 inch deep in Alabama, is to prevent the feet freezing. The new to reach the crown and eyes. The first does them good. It rarely ever freezes over on such short, heavy deep roots, plants the roots below the freezing point.

Suitable Fertilizers

I believe the use of barneyard fertilizer causes more failure than all other causes combined. If it comes in contact with the roots it starts a decay attack, kills or so badly injures the plant that it will not bloom. Without any manure, well mixed with the soil may not harm the plant, but I now take no chances and use humus and wood shavings in preference. A handful of each is about right.

By POPE M. LONG
Gardova, Alabama

Peonies Should be Sprayed

While Peonies are usually free from disease, nevertheless they should be sprayed two or three times a year for best results. Bordeaux mixture is the best spray to use. The first spraying should be when the plants are only a few inches high, the next when the buds are about the size of a small marble; the third about two weeks later. If you object to the discolored foliage use as the last two sprays the following instead of the Bordeaux mixture: Two tablespoons of Formaldehyde and two ounces of well dissolved sulphur-sulphate soap to four gallons of water. The first spraying is the most important, so make it thorough and wet the ground for several inches around the plant. In other words, spray the ground as well as the plant. You may think it a waste of time to spray Peonies, but if you want the best growth and the most blooms take my advice and spray one time and you will be surprised and delighted at the result.

The one disease for which I have no remedy is root-rot caused by the *straw* mode worm. What a way to find it, eradicate these pests and this is sure to be done as our best growers are now giving it much thought—the Peony will become the most popular perennial of the South for no other flower can match it in beauty.

PEONIES FOR THE SOUTH

(Labeled by varieties as can furnish in stamps)

	Per. Deser	Per. Deser
Adolphe Deser	\$1.00	\$1.00
Albatre	1.50	1.00
Auguste d'Hon	2.00	2.00
Dorothy E. Kildy	2.00	2.00
Duchesse de Nemours	75	1.50
Fatima Maimon	75	1.50
Germaine Bignat	1.50	3.00
John Hancock	1.00	2.00
Maryelle Deser	2.00	2.00
Marguerite Gerard	2.50	1.00
Miles Standish	1.00	2.00
Mme. Annote Deser	2.00	1.00
Monieur Jules Elis	1.50	1.00
Reine Harms	2.00	1.00
Roy Mac	1.00	1.50
Simone Chevalier	1.50	1.00

This list includes all the varieties of Peonies we can furnish in stamps for 1924. The rest of our stock consists of cheap, young, lucky, one-year plants or equivalent, 3 to 5-year old.

Peonies
Better Plants
Peonies

Trouble with Peonies

To Two Editors:
I have lost Peony plants which I bought four years ago and they have not bloomed. They are now dead and are off before they open. They are large and healthy-looking plants. I am troubled with black spots on the leaves and the buds. Do you think that stops them from blooming? Can you tell me how to get rid of them?
Mrs. E. J. Deser, (W.A.)

Answer:—This trouble is probably light, or "candy" but, as the commercial growers call it. While I have never seen it, it is authoritatively stated to be due to some form of blight, it is my personal opinion that this is the cause. Spraying each season has eventually caused this to disappear from my own garden. Use one pound of bluestone, and one half pound of hydrated lime, and one half gallon of water. One application.

FRAGRANT PEONIES

Are there any "Fragrant Peonies"? If so, please give me a list of the names.

There are no Peonies which have a high perfume like that of the Rose and the Sweet Pea, but there are several which have a pleasant fragrance. A list of such Peonies might well include *Edulis*, *Superba*, *Gentle* de

Nantou, *Carna*, *Elegans* (Gr.), *Lamarine* (Cal.), *Mme. Auguste Pelteran*, *Mme. Geisler*, *Mme. Thourven*, *Monsieur Haral*, *Vicente de Forceville*, *Zoe Calot*, *Dorothy Kelway*, *Kelway's Glorious*, *Splendida*, *Venus*, *Bertha*, *Enfante de Nancy*, *Gallathes*, *La Perle*, *Mme. de Freyria*, *Marcelle Deser*, *Mont Blanc* (Lemoine), *Mireille*, *Mignone*, *C. Primavera*.

BLASTING OF PEONY BUDS

Why does a three-year-old Peony lose all the buds by blasting each year? I have a new plant which I cannot get into bloom.

The blasting of the Peony buds is probably due to the need of phosphoric acid to develop the blossom. We would suggest the use of about a half handful to a handful of this fertilizer, raking it very loosely over the plant just before it comes up in the spring.

If phosphoric acid is not available then cut about double the quantity of ground bone or bone meal. We think that this will in a large measure correct the trouble.

Had this difficulty occurred last year we might say that it was due to possibly a late frost which many have with up the buds so that they will turn black when they are about the size of a marble.

When the buds are the size of buckshot may be sufficient, but an earlier dose when the stalks are about six inches tall would be advisable until the blight is under control. This spray will also prevent the Botrytis blight, in which the buds and stems turn black and rot, provided all affected parts are pinched out and burned as they appear.

Any form of blight can be spread by ants, if blight is present. If their nest can be located, boiling water will kill them. Red pepper or kerosene might drive them away, and some people like Paris Green might do the work. Thorough cultivation will drive them away also.

In disinfecting, pinching out blight or handling the plants, the hands should be disinfected to avoid spreading disease. Buds might turn brown and die because of lack of water, in a sandy soil, or a soil very light and lacking humus; or because of heat, if too close to a building; and fresh manure might also cause trouble.

EDWARD J. JONES, JR.

GEORGE H. PETERSON, PRESIDENT
WILLIAM TOPFER, TREASURER
S. F. PETERSON, SECRETARY

GEORGE H. PETERSON

(INCORPORATED)

ROSE AND PEONY SPECIALIST

PAID LAWN, N. J., U. S. A.

October 17, 1916.

Mrs. Edward Harding.

R. F. D. 1.

Mainfield, N. J.

My dear Mrs. Harding:

I am sending you by Parcel Post a little package containing two diseased peony roots. The smaller root is one of *Mad. Boulangier*, which we have had on the place for the past nine or ten years. You will observe that it has made no new growth the past season, in fact, it is absolutely hopeless. The larger root did make some growth the past season, which growth are very "fuzzy", characteristic of the trouble commonly called the "Lemon Disease"; i. e., when any new growth are produced they are of this character. Of course, where the disease is very light, growth of this nature will be much less pronounced and if the disease is in a very light form the flowering of the root will not be seriously affected. I experienced some little difficulty in getting these roots for you, having dug up quite a number of plants to find them, since we have been endeavoring to get rid of the disease, except as a curiosity and a source of education. *Mad. Boulangier* is the only variety which we have held on to for so long a time. When a root gets in this condition, it simply sometimes to a struggle year after year for a mere existence, without hope of thought of flowering.

There is another so-called disease which you will meet with in buying and growing peonies. A root will sometimes be almost covered with a hairy mass of rootlet growths, on which will be plenty of nodules. This, however, does not seem to affect the development of the root nor its flowering qualities, in fact, we sometimes think that such roots will flower even better than those not so affected. We do not, however, like the appearance of such roots and we have caused to plant roots in ground following one year, which experience has taught us will produce this result.

When you were here last I told you how we divided our roots as soon as they were dug and replanted them, but this year, while we are dividing them right after digging, we are holding the roots three or four days so that the portions where cut will be healed and, in appearance, we think black rot or decay will be less liable to set in. We are not, however, expecting the roots

note

From Kellogg's "Manuals of Hort." - New Edition 1924 -



A Kellogg peony border at Great Down, Farnham.
(The first introduction of the Peony.)

EVE IN HER GARDEN

By T. Geoffrey W. Heslop, M.A., F.R.H.S.
THE PEONY

THE growing popularity of the peony is largely due to the wonderful new varieties, single and double, that have lately been placed upon the market.

This plant has been very slow in coming into its own, and even today I much doubt if the average British horticulturalist appreciates the great possibilities that lie before the peony.



Peony, Monlight.

THE peony is a native of the mountains of the Himalayas, and is one of the most ancient of garden flowers. It is a member of the Paeoniaceae, and is closely related to the tree peony, which is also a native of the same region. The peony is a hardy plant, and is well adapted to the climate of this country. It is a very beautiful flower, and is well adapted for the garden. It is a very popular flower, and is well adapted for the garden. It is a very popular flower, and is well adapted for the garden.



Early Memphis Daff. of Wm. W. W. Langford.

tempting others from abroad. Much depends upon the size of the plant received to obtain good results, and a small specimen, although it may eventually do well, is often lost value by the purchaser had to wait too long for bloom. In dividing up peonies always of the whole root, and, having removed all soil, select the best divisions and remove the same with a strong knife. A division should have from three to five eyes, and be well supplied with roots. In planting the soil plant two inches deep. If the buds are placed two or three inches below the surface of the ground this will be ample. Deep planting means loss of flowers, and often the plant itself as the crown of the plant must always be near the surface of the soil.

Peonies like a good rich soil, and in the light soil, if possible, and with good drainage. In the use of fertilizers, great care should be exercised, well-decayed manure and lime must be forked into the surface of the soil and be forked in by all means.

Early autumn is the best time to plant peonies, but the planting season can be extended right on to the end of March on moist soils and in most localities. Peonies will thrive in practically any position, and are extremely hardy, withstanding severe frosts and cold winds without harm. The southern part of the garden can be given over to them, or they can be planted out in border or corner. As a border flower they are superb, and it is surprising to me that many folk do not grow them. As cut flowers both the single and double varieties are of great value—they last long in water and give a grand effect.

There is much money to be made out of this flower, and many amateurs can be made out of it. The market new varieties of peonies are sold at a high price, and I would therefore strongly advise all interested to try a visit to Langford and select that kind the fullest information.

X-Ray Treatment for Peony Root-gall

BY EDWARD AUTEN, JR., (Illinois)

THE worst of all Peony diseases is root-gall, sometimes called Lemoine's disease. This is caused by a nematode worm, invisible to the naked eye, living in the soil, as well as in the roots, and from the soil infesting healthy roots. Plants become stunted and in time fail to bloom or make satisfactory root growth.

Some dealers insist that the disease does not spread from one plant to an adjoining healthy plant, and that, therefore, there is no risk in planting diseased roots, provided a second planting is never made in the same ground. I know this to be wrong, that the disease will spread. Therefore I believe it a serious mistake for a dealer to send out diseased roots, as is so often done. And rather than spend our time trying to talk the disease out of existence, we might better make a determined effort to get rid of it.

There is only one sure method, sure known at this time, and that is to dig up the root and burn it. This kills the worms, but is rather hard on the roots as well. In a search for some treatment which would kill the nematode worms but not the Peony roots, I had some hopelessly affected roots of the variety *Duchesse de Orleans* treated with X-Rays last fall. Our local physician, generously donated his services and the use of his X-Ray machine. Two divisions were given eight minutes exposure, two others four minutes, and one only two minutes. Then the science instructor in high school helped in a microscopic examination of the treated roots, but as the microscope was of limited power we could learn nothing definite as to whether the results would be what we desired. An untreated root, however, showed changes after a few days, which did not show in a fragment of the treated ones, and we were hopeful that something had been accomplished.

The roots were planted at once, with many misgivings as to whether they would grow. But they all came up this Spring, proving that the X-Ray would not kill the roots, and are growing well at this writing, the middle of June.

I AM making this preliminary report, hoping that several others will make the same experiment this Fall, that this method may have a thorough and as speedy a trial as is possible. While cutting off as much diseased root as possible and resulting in new ground may in time cure a root, and

while dipping in lime-sulphur might be of value, still a positive extermination, if obtainable even at the expense of X-Ray treatment, would be a boon indeed, in the case of some of the fine varieties now so grievously afflicted.

Another experiment worth making, would be to dig an affected root quite early, break off the hairy roots and galls, reset in fresh dirt in a small box, and hold in cold storage until early winter, then plant outdoors. Or even holding fifteen months in cold storage before planting is worth trying, for while not all is known of the habits of the nematode worm, it is known that it likes a temperature around seventy degrees, and it might not be able to survive a long period of low temperature.

Calumet, N. Y.
February, 1925

THE FLOWER GROWER

The Peony

Findings on X-Ray Treatment of Peony Roots for Root Gall

BY EDWARD AUTEN, JR.

IN THE September 1923 number of THE FLOWER GROWER I told of treating with X-Ray some hopelessly infected roots of the Peony, *Duchesse de Orleans*, in the Fall of 1922. These were dug this Fall (1924), and I can now report on the experiment, hoping that it will inspire others to continue experimenting along these lines.

The five roots treated and planted in new ground all grew, but none of them bloomed the two seasons they were in the ground. As the original plant was so badly diseased that it had practically ceased blooming and as these divisions suffered severely from excessive drought the first Summer, and during April and May the second, the lack of bloom might be blamed on other causes than the X-Ray treatment. When planted they still had the diseased rootlets attached. On digging, the buds were of good size, and indicated bloom for next year. The diseased lumpy rootlets had disappeared, and the large roots seemed to be practically free from infection, though whether completely so, one could not tell without a microscopic examination or further growing on. There had been little if any increase in size of the divisions, but this might be because of drought, and I have no doubt but that another year in the ground would have resulted in good increase.

While at this time I cannot report a complete success by the use of the X-Ray, still the results with it are far different from an attempt I once made to reset a similarly affected root without removing the small lumpy rootlets, but planting in an isolated place and leaving it to grow on for several years. It made no gain whatever, and as a result of that earlier experiment I adopted the practice of burning all badly affected roots. I have succeeded in getting some healthy stock of *Soleagne*, which has been universally infected in the United States, by removing all small lumpy rootlets and cutting back the main roots to mere stubs about two inches long. This method has also been successful with *La France*, but not with *Soleagne*. At the time I set out the roots treated with X-Ray, I also set out another root trimmed back, an exceedingly vigorous variety, while it made improvement, on digging this Fall, it still showed considerable infection.

I also set out another infected root which I dried in the sun for two

weeks, and it dug out practically clean, but the drying had been so severe that the original center of the plant had died, and new crown material had formed. But this had put the plant way behind the X-Ray treated roots.

The cost of a four to eight minute treatment of divisions of some valuable variety should not be excessive, in proportion to the ultimate gain resulting from a healthy stock. And if we do not take some extreme measure soon, there is going to be a loss of high priced stock, and also of confidence of the public in the Peony, but would make a judicious use of the X-Ray or some other method most advisable.

I am understanding the matter when I say that three-fourths of all the dealers from whom I have bought Peonies in the last fourteen years have sent me more or less diseased stock, and it is only by having unlimited new ground, and by constantly resetting, at the same time rejecting, that I have been enabled to keep ahead of this curse. Some growers with little or no new ground, and with little or no resetting, are in a "fast" state, and are sure to deliver the goods, and find nothing to equal the Peony among all hardy plants.

March 5, 1924

Fort Wayne, Ind.

Mrs. Edward Harding,
Plainfield, New Jersey.

My dear Mrs. Harding:

I have read with much interest your little volume, "Peonies for the Little Garden." I am enclosing herein a list of the peonies, iris and some of the other plants which I have in my own garden. I have a particularly complete list of the best varieties of single and Japanese peonies.

In your book I notice that you do not make mention of the variety Tomatbako, which seems to me to be the finest of all the Japanese peonies although some of the others press it very closely and are very dainty and artistic. I first saw it at the Detroit show several years ago and Mr. Wassenberg and Mr. Bonnewitz and others out in this direction concur with my opinion.

I haven't your volume available at this moment but my recollection is that you state that Isani Gidai and Tokio are indistinguishable one

from the other. The petals of Isani Gidai are milk-white without any flesh whatsoever. They also are very heavy and wax-like. This is a very beautiful flower. The petals of Tokio, on the other hand, are of a most exquisite flesh color and the center is possibly the most beautiful yellow I have ever seen in any flower. This variety was as dainty and beautiful as any variety in my garden last year and it is certainly unsurpassed for the delicacy of its beauty.

I am enclosing a complete list of the peonies and iris in my garden and it may be possible that you will be interested in an exchange of some of the rarer varieties.

Yours very sincerely,

Franklin B. Head

Mrs. Edward Harding,
Plainfield, New Jersey.

March 7, 1924

My dear Mrs. Harding:

In my letter of the 5th I inadvertently referred to the variety Tokio instead of Toronomaki. Toronomaki is the flesh pink peony and Tokio is its counterpart, except that it is a deeper pink than Tomatbako; possibly a clearer pink although I do not believe it is as attractive as Tomatbako, which might be described as a creamy pink; perhaps it gets that effect from the difference in texture. Tomatbako is much larger than the other varieties and of much heavier substance.

Yours very sincerely,

Franklin B. Head

Newton Highlands, Mass., August, 10th., 1926.

Mrs. Edward Harding,

Farwood, New Jersey.

Dear Mrs.:-

Your letter of July, 30th. arrived just as I had a letter to you about half written and after reading yours I found it best to rewrite mine.

I am sorry to learn that you had an attack of pneumonia, it is not a good thing to have, and you were fortunate to recover as soon as you did. I have lived in dread of it ever since I was a small boy and had an attack of something which I imagine would be called pneumonia to day. But however I have managed to round out the allotted span of years and I fancy that I am still going strong.

I am very glad to receive such a good report of "Priscilla Alden". My old plants gave me a fine display of large blooms this spring but my younger plants were not as good in size of flowers but every shoot had a bloom. My large blooms were as good as Kelway's Glorious but the plants are very much more vigorous. In fact Priscilla is one of the most vigorous varieties I have. I think you will have still better blooms another year if you give it plenty to eat and water when it is making spring growth.

I think "Diana" also will give you better blooms next year than you had this, and I hope you will give it the very best care you know how to give. It is as fine in its way as "Tomatbako" and a rich crimson maroon in color when at its best.

I like "Departing Sun" very much. I came by it through seeing it advertised in the American Bulb Co's catalogue. I sent to them for it and came to me from Good & Reese.

Your Currant Red was very fine with me this year, giving me blooms eight or nine inches across.

Anton Bulk has some very good Japs. which came out of a collection imported into Holland from Japan and renamed there. Some of them I think are repetitions of varieties already in commerce, but there are several that seem to be very good. I think they used very poor judgment in renaming them: it would have been much better if they had kept the Jap. names.

He showed some of them in Boston this spring and I made note of the following- Gertrude, flesh pink; Evaline, strawberry pink; Clarice, deep crimson; and Eva, carmine pink. I think I shall try these.

I did not go on to the peony meeting at Fort Wayne this spring, so I have not seen any of the new Western varieties.

The best thing I have seen this year in new varieties is one of Shaylor's which has not been put on the market yet. Mr. Allison, Shaylor's partner, brought me a bloom and it certainly was a very beautiful thing, somewhat in the way of Rosa Bonheur at its best, but of a beautiful flesh pink color.

He said Shaylor was thinking of calling it "Nick Shaylor". I told him if he could do so, to stop it by all means as it was too beautiful a flower to bear such an outrageous name, with all due respect to Nick.

I had quite a talk with Mr. Allison this spring and I find he does not approve of Mr. Shaylor's picaresque ways at all. He has taken over all the Shaylor stock and is growing it on his own ground. He intends to send

Blind Scraps of Peony Roots

BY EDWARD AUTEN, JR., (Ill.)

THE underground system of a Peony plant consists of a fleshy central mass from which the stems grow upward, and from which also the long finger roots branch downward. The new stem growth starts in the Spring from buds or eyes which have formed the previous Summer on the central mass, commonly called crown material, and which buds have then lain dormant through the Winter.

Peony roots are divided in the Fall, and an old clump of roots is cut into as many new divisions as possible, each with from one to five eyes, and with crown material and finger roots to balance top growth from the eyes. But the roots are brittle and easily broken, and often in trimming the divisions to proper shape there will be scraps of finger roots, also of crown material which have no eyes attached. One naturally wonders whether it is worth while to plant these "blind" pieces.

A LONG finger root with no crown material attached will live for several years underground and make a callous like a round knob on the end which has been cut, but it absolutely cannot make new eyes or stalks, and is worthless. But a piece of crown material, either with or without some root attached, will usually develop eyes and eventually make a fine plant. There are probably dormant buds scattered through the crown material, at least in some varieties, for I have had many roots not only send up stalks the first Spring after planting, but even bloom the first season. Others may not send up stalks until the second or third year. There is a great difference in varieties in this respect. *Adolphe Foucault* and *Mikado* seem to be either very slow, or else refuse to respond. Last Fall a root of some other variety, not as large as a lead pencil, developed an eye in a month's time when I held it in damp moss for later planting.

The crown material in an old clump may extend down as deep as six to ten inches, and of course there is no harm in planting all blind roots which might possibly have some crown material. But I never plant a root which I am sure has none. Deliberate cutting of divisions without eyes is not recommended, unless from very old clumps, say over seven years.

BY PLANTING these roots three or four inches apart, very little space is used, and the plants obtained may be counted clear profit. They should be in soil that is very well drained, and should never be allowed to suffer from drouth, which they cannot stand

as well as a full sized plant does, being deficient in roots often in proportion to top. As new shoots may appear later in the season than on a regular plant, the soil should not be cultivated to any depth, or new shoots may be broken off, and this will often kill these scraps while making a supreme effort to start.

ALL of the above applies to the common or Chinese Peony. The Officialis form is entirely different. The root system consists of a clump of roots like sweet potatoes or Dahlia roots, fastened to a central stem or crown, from which the eyes are put forth, and which may be divided like any other Peony. But one can also plant one of the separate tubers with no crown material attached, and usually the second Spring it will send an eye out of the side of the tuber, and will eventually make a regular clump. I do not know whether this method yields more increase than to divide in the regular way. In more respects the Officialis varieties are not as vigorous as the Chinese, and I would advise caution in any operations on a considerable scale.

THE POPULARITY OF THE PEONY. We have just received a letter from Mr. A. M. Brand from Minnesota, U.S.A., and as Mr. Brand is president of the American Peony Society—a body of considerable importance—and as the letter puts into words my own thoughts and desires, you may care to publish it in the *Peony*. It is especially the peony may become really popular in this country.—JAMES KOLWAY.

GENTLEMAN.—I have understood, as you state in your letter what seems to many of us in this country to be a very strange thing indeed, that the peony is not so popular in Great Britain as it is with us and with our Canadian friends across the lines. From what I have heard of the English climate it must be ideal for the bringing out of peonies to their very best. In the northern two-thirds of the United States and in the southern half of Canada wherever flowers can be grown there is no flower that compares in the hold the peony has with the people. It is the flower pre-eminence. We grow beautiful roses, we grow all the flowers of the north temperate zone, but no flower is so much thought of and sought after as the peony. This has been true only since the introduction of the choice peonies, which we have been carrying out during the last twenty-five years. Your form has been very fortunate in the high standing of this comparatively large number which they have added to this list. No peony collection with us is considered complete until it numbers among its varieties *Kelway's Glorious*, *James Kelway*, *Baroness Schneider*, *Phyllis Kelway* and *Lady Alice Duff*.

The appreciation of the peony has been brought about through the untiring efforts of the American Peony Society, which is a society international in scope, through many local peony societies, many of which are of considerable size, through the many excellent peony shows which these societies stage during the peony season and also through the heavy advertising campaigns carried on by the large peony growers during the selling season.

I am glad to believe from what I have read and heard of the English soil and climate that your results with the peony would be more uniformly good than our results. We have too much hot, dry, windy weather apt to set us right during the blooming season.

From The Garden
13 March 1926

Discarded. 1926-7 1927

and
Hwy.

Judge Berry - Poor stems.

Christine Privly } Ordinary
Mrs. Jennie } Uninteresting

Carrollin. Just poor stuff.

Randall's - Very poor - (trafficked)

Sowersby - Richardson } Not good

Boase's - } Same

Mrs. de Galhau. Always badly
even at its best, and is too

slow as failure.

Germaine Bisset } Shamsie die

Corson's d'Or - } Colors not
very good but
for the flowers.

Mabel Trambolin Not good enough

Lillian Ginn pale blue/pink

Poor stems. Somewhat like
Judge Berry. Bad buds.

Remette Not so good. Plant came
from H. H. H. three yrs ago.

But I was disgusted with the
stock. Just as Mrs. B. 3

years.

• Randall's - Fair only.

Some better seedlings } my own
just a little better

- 2 -

cut good clean, strong roots, believing that it is the only way to gain and hold the trade.

I saw your namesake again this spring, carrying another load of fifty blooms. Mr. Norton feels very proud of the thing and dislikes to disturb it as long as it does well. He has only the one plant but I think you will eventually get a piece of it when he concludes to divide it. Frances Willard was very fine with him this year also. It flowered close after the Harding with forty blooms.

One of the most striking things in his garden is an old plant of Kelway's "Purple Cup". It is similar to King of England but better.

The most striking thing in his seedlings this year was an immense Jap. flowering for the first time. It is current red or pink in color with guard petals as broad as ones hand and shell shaped: not falling back.

I told him to clear the others away around it and let it be where it is for another year so as to see what it will do. If it holds good it certainly will make a sensation on the exhibition table.

Katherine Havemeyer was very fine with me this year and it is a question in my mind which is the better, this or Pres. Wilson. Betty Blossom was good too but Sarah K. Thurlow will have to be much better to suit me.

I certainly shall appreciate the "Alice Harding" and I hope that I will stumble on to a good thing occasionally that I can send you.

I think I must send you this fall "Mary Moy" a Jap. seedling I picked up last year. I think it is in a class with Tokio and Amara-node.

By the way did you see my article on Tamabako and Tokio, in the Bulletin last fall? I am preparing another on Isini-Guidi and Tora-no-maki.

Yours very truly,

A. H. Fawcett.

Newton Highlands, Mass., January, 13th, 1927.

Mrs. Edward Harding,

Farwood, New Jersey.

Dear Mrs.:

Your letter of January 3rd. was duly received and I assure you that you need not feel dismayed at not acknowledging the receipt of the peony roots I sent you last fall, for I find that I started to write a letter to you back in October and never finished it. I was very busy in the fall with work connected with our florist business and I didn't even get time to divide up a lot of my peonies as I fully intended to do.

In regard to the planting of the root of Alice Harding, I will say that I have been preparing a small piece of ground near our office, which I propose making into a show garden, something after the style of the old English cottage garden. A place where I can plant such things as I love to grow, just for their individual beauty and interest, without regard for landscape effects: tulips, daffodils, iris, peonies, roses, phlox, lilies and as many other good things as I can get into it or that I can afford to buy or come by in other ways. It is decidedly limited but includes a pergola trellis, about fifty feet long, for climbing roses, and a fence with pergola gateways to be covered with vines so as to give a slight feeling of seclusion and privacy. The Alice Harding reposes in one of the beds in this garden and the special preparation consisted in making a large hole down to the subsoil and filling in with fresh soil taken from an old farm.

That in the lower part of the hole is mixed with sheep manure and bone, but the upper part about the crown is without any kind of fertilizer and the crown itself is covered with Holland peat moss. Probably in the spring after it starts to grow I shall use some Clay's fertilizer as a topdressing.

I have ten or a dozen kinds of lilies planted and there are five other kinds that I ordered which have not yet arrived from Japan. I have places prepared for them and covered with leaves to keep the frost out so I can plant them when they get here if they ever do.

I am a little bit cracked on daffodils also and I put in quite a collection this fall including such things as Mrs. Krelarge, Van Wavorn's Giant, Seppy, Cleopatra, Isolda, Duke of Bedford, and Waredale Perfection.

King Alfred, Olympia, Mrs. de Graaff, Miss Ellen Terry, Sir Ernest Shackleton, Oliver Cromwell and Sir Watkin were very fine with me last spring and several varieties of Barri and Leedall.

In regard to seedling peonies I also have a row of them that I am watching with much interest. There are about sixty in the row and about three quarters of them have flowered. Several of them are really very good, but as you say they may be all gone.

One of them has foliage and stems darker than Mrs. Gaudichau, with a dwarf habit and large white flowers.

The first one flowered about three years ago and is a very good Jap. It is not particularly distinct in color but the form is unique. In color it is somewhat of the Tokio type but the third year blooms developed a very peculiar center. The blades of the stamens are very long and instead of spreading out as they usually do they appear as though they had been taken between one finger and thumb and twisted up spirally making a conical center. I had a flower in my collection last June, in Boston which attracted quite a bit of attention.

- 2 -

Your yellow-pink Jap. # 16 sounds very interesting. Yellow pinks in any form are nearly as scarce as hen's teeth and if it has a good habit you certainly are in luck. I assure you I would very much like to see that and the other one you speak of, growing on the plants, but it is so hard for me to get away at that time of year that I doubt if I ever accomplish it.

As to the Peony Society you don't seem to have a very exalted opinion of the westerners, neither do I. It seems to be a case of the dog's tail wagging the dog now. There are so many out that way that we of the East hav'nt much to say. But we did give them one jolt and that was on the matter of annual meeting. I put Mr. Boyd up to the fact that New York is the home city of the corporation and I see by the report of the last meeting that they had to acknowledge it and in future the annual business meeting will be held in New York and the policy of the Society will probably be shaped at these meetings.

Speaking of seedlings it seems they have adopted the rule that a new seedling must be shown three times and passed upon by the Judges before it can receive a certificate. The way to insure the introduction of nothing but the very finest. At first reading that might seem plausible, but really I do believe it will result in large numbers being sent out without bothering about a Society certificate, for ordinary members can't afford to trot all over the country with a seedling for three years.

To have it at its best it must be three years old at the least, before it is shown, that is, three years from first bloom, and then add three years on top of that I can see where people will say, go hang with your certificate, and put it out on its own merits. I know how it is for I have, trying for at least four years to get Priscilla Alden before the Seedling Committee and the only time I was able to do it was year before last at Philadelphia and then the hot weather had ruined the flowers so they were not worth considering, not only mine but all the other seedlings. I couldn't get them out to St. Paul, Des Moines or Fort Wayne and I doubt very much if I can get them out to Peoria.

Another thing they did at the last meeting was to pass a vote that all commercial growers who are members shall pay seven dollars instead of three each year as dues. Any one who gets out a catalogue or price list offering peonies for sale must pay the seven dollars. I don't know who originated it, but it looks like a freeze out put up by the large growers who can afford to pay it. I may be wrong but it strikes me that they have no legal right to do a thing like that. I know no other society which does such a thing. If it is not asking too much I wish you would mention the matter to your husband and see what he says about it. I can conceive why a person who has something good which he wishes to put on the market or some surplus stock which he wishes to advertise should be penalized on account of it.

In regard to the two varieties I sent you I want to say that I do not make any wild claims for them, but the stock was turned over to me to try out, by Mrs. Roberts and if they had not seemed promising I would not have bothered with them. I think you will like them if they prove as good as they promised.

Yours very truly,

N. H. Finck