

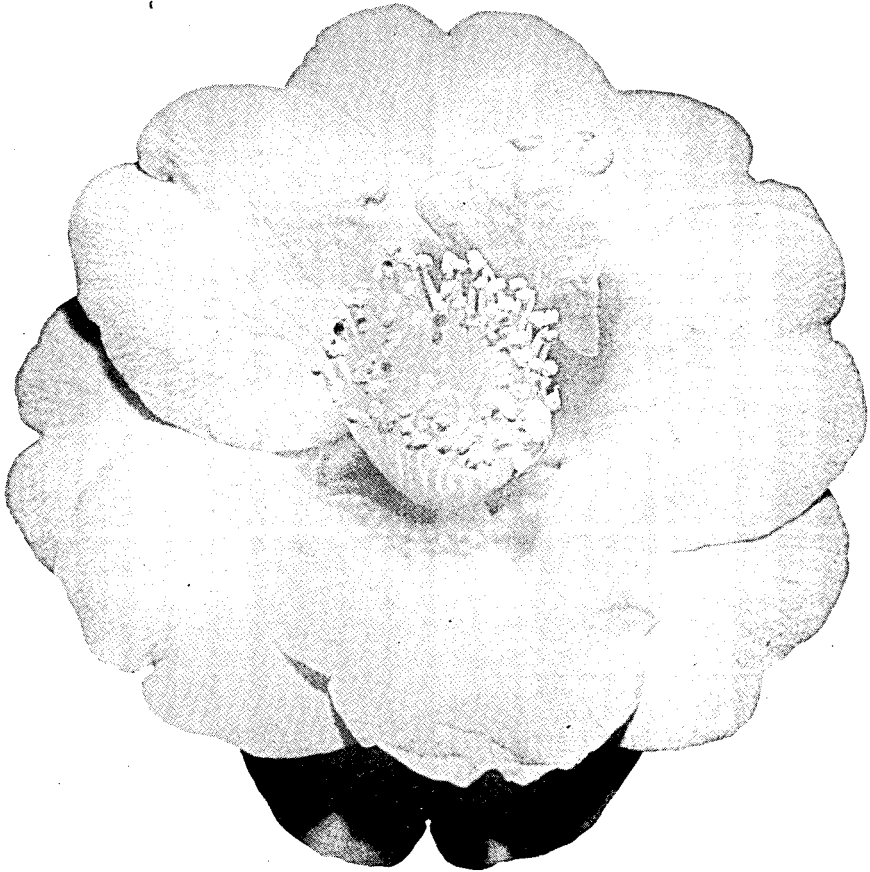
# *Northern California Camellia Society, Inc.*

A Non-Profit Organization

Vol. 3, No. 1

OFFICIAL BULLETIN

October, 1949



**LADY CLARE** (Akasi-Gata, Grandiflora Rosea, Empress)

Very large, deep pink semi-double. Vigorous bushy growth. Mid-season bloomer. First reference to this variety is in *Gardener's Chronicle* 73: 93. 1923. It was imported to England from the Orient and renamed.

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Courtesy East Bay Nursery, Berkeley  
Photograph by Herbert V. Mitchell

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**ANNUAL CAMELLIA SHOW:**

The Northern California Camellia Society, Inc. is a non-profit organization of camellia fanciers interested in the culture, propagation, and development of camellias. Meetings are held on the first Monday in each month from October to May inclusive, at 8 p.m., at the Chabot School Auditorium, Oakland. Membership is open to all those with a serious interest in the subject. Annual Dues \$5.00. Membership application blanks may be obtained from John Paul Edwards, Secretary, 1347 Trestle Glen Road, Oakland.

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**OCTOBER MEETING**

The October meeting will be held on Monday evening, October 3, 1949, at 8 o'clock, at the Chabot School Auditorium, Chabot Road and Patton, Oakland.

Toichi Domoto will give an illustrated talk on *Camellia Sasanqua*.

Following the intermission, kodachromes will be projected showing new varieties of *Camellia Japonica*. Courtesy W. T. Wood, Macon, Georgia and Herbert V. Mitchell, Oakland.

A Question-and-Answer period will be conducted by P. J. Ferrarese of San Rafael. Bring your cultural questions.

TOICHI DOMOTO NURSERY, Hayward, is donating the plants to be given away as door prizes: *SHOWA-NO-SAKAE* and *NARUMIGATA*, both *sasanquas*.

## TRANSPLANTING CAMELLIAS

By William B. Smyth  
Smyth Camellia Nursery, Ross

I have been asked to give a practical demonstration of transplanting and I sincerely hope that you will get some worthwhile information from this discussion. I shall show we perform this operation in the nursery (1) from containers to larger containers, (2) from containers to the garden, (3) from the garden back to containers, and (4) transplanting from one location in the garden to another location in the garden.

### **Transplanting From Containers To Larger Containers**

The first thing to consider when transplanting from containers to larger containers would be whether your plant needs transplanting. The way to do this is to find out whether the earth in the container is completely used up by the roots of the camellia; that is, determine whether the roots have come out to the edge of the container. In the case of a small plant in a pot or in a tapered container, knock it out of container and inspect the roots. If the plant is pretty well pot-bound it needs transplanting.

Many people have an idea that if they buy a camellia plant in a gallon can, they should take it home and put it into a bigger container. If a gallon-size plant is transferred to a lard bucket, there is more soil than it can use up in several years. During this time, the earth might grow sour. The proper size container to use when transplanting to a larger size is from 2 to 4 inches larger all around. The roots will take up that much more of the soil the first year.

Now that the size of container has been decided, the next step is to decide on the type of container. Camellias may be grown in ordinary clay pots, glazed pots, metal containers, wooden boxes or tubs. I think most camellias in private collections

are raised in wooden boxes or tubs or in glazed pots. The disadvantage of growing camellias in clay pots is that they dry out. Metal containers and wood containers, on the other hand, hold the moisture longer. The proper size of container can be bought or it can be made.

Select a container that is large enough and make sure that it has plenty of drainage holes to allow the water to drain out. To insure good drainage, I put an inch or two of coarse gravel in the bottom of container. This allows the water that passes around the roots to drain out of the bottom immediately. The water does not stay there and cause the soil mix to become soggy.

The next step is to prepare your potting soil. Many types of soil are used, depending on the kind of soil available. One person doesn't have the same type of soil as his neighbor. But it is possible to make a good soil mix of almost any soil by using a mixture of peat, leaf mold and soil. If the mix is friable, it will remain rather loose.

Now take your container that has an inch or two of coarse gravel at the bottom and put an inch or two of good soil on top of the gravel. If the camellia plant happens to be in a gallon can, snip the can down in about three places with tin snips. Never try to knock the plant out of a gallon can because in so doing you will knock the earth loose from the roots. Of course, if the container is tapered, you may tap it on a table and it will gradually slip out and the whole root ball will be in your hand.

Be sure to inspect the roots well. The idea is to pull the roots loose without breaking them so that they can go out into the soil about them; this refers to the roots that have grown back into the root ball again.

They sometimes have a hard time breaking out into the soil.

Now place the plant in the center of container so that the main stem is as straight as possible. Then put in more of your soil mix and firm it down gently so that there are no air pockets left; but not too firm, for the sake of good drainage. Some people fill the container up to within 1 inch or ½ inch from the top; but this is not satisfactory because it gives little space for watering. I prefer to have from 2 to 3 inches of container showing above the soil.

After the camellia is transplanted, fill the container to the top with water so that it will soak all the earth in the container.

I shall demonstrate transplanting a year-graft of Strawberry Blonde to a tapered redwood container with two slits at the bottom for drainage. I shall put pieces of pottery over those slits to keep it open so that the water will be able to drain out. Over the crockery, I shall put in about 1 or 2 inches of coarse gravel; and over the gravel, 1 or 2 inches of potting soil. I do not use too much soil because I want to prevent its souring.

You will notice that I have made three long, vertical cuts in the gallon tin in order to get the plant out without any injury. These roots are just about right and won't have to be straightened out.

It is important to place the main stem of the plant as straight as possible in the wooden container. This being a square container, there is about a 2-inch space at the sides and a 3-inch space at the corners, allowing room enough for the roots to grow.

**Question:** Do you have to take some soil off at the top of the ball?

**Answer:** No, not unless it has been planted too deep.

**Question:** Do you have to transplant every year?

**Answer:** No, this plant could grow in this container for two or possibly three years.

**Question:** How hard do you have to tap soil down?

**Answer:** Just so that there won't be any air pockets left.

**Question:** Do you ordinarily transplant grafts as early as that?

**Answer:** Yes. This was a three-year-old understock. Camellias don't seem to mind much being pot-bound. They can grow that way way for several years.

**Question:** What proportion of soil and peat moss do you use?

**Answer:** It depends on what you have to work with. At the nursery we use the following mix:

- 1 part leaf mold
- 1 part peat moss
- 3 parts soil
- 1 part sand

You don't want your soil mix too heavy because that would prevent good drainage. Nor do you want the soil mix too light, for the water will go through so fast that the root-ball won't even get wet. The other day I visited a nursery where the soil mix was so light that the roots hadn't got wet after being watered all summer.

If you have an alkaline water and you water the plant frequently, it will suffer that much more.

If you have the soil mix just heavy enough to provide adequate drainage and light enough so that water will penetrate the root-ball, that is the kind of a soil mix to use.

If you set the container on the ground, you will need some cleates; otherwise the slits at the bottom of the container will get clogged up.

### **Transplanting From Container To Garden**

When you go out and buy a plant in a container, you may want to plant it in your garden. The first step is to look for the best place to plant it, where there is protection from strong wind, adequate drainage; the latter is most important.

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## THE USE OF COLCHICINE IN CAMELLIA BREEDING

By Robert M. Hoffman

University of California Agricultural Extension Service  
Red Bluff, California

The use of the chemical colchicine as a means of chromosome doubling has opened a large reservoir of possibilities in plant-breeding work. The fact that any numerical change in chromosome number fundamentally entails a mutation which may be expressed in a number of characters of the plant indicates the significance of the statement above. Colchicine, a poisonous medical chemical, has been used since 1937 in plant-breeding work to produce changes in plants by doubling the number of chromosomes in cells, a condition referred to as polyploidy. The increased number of chromosomes usually brings about an increase in size of the affected cells and various degrees of changes in their functions. In contrast with normal plants, those developed by colchicine treatment often show changes in height and width; in thickness of branches, in flowers, fruits and seeds; in fertility of flowers; and in physiological responses. However, the degree of changes produced when the chromosome number is doubled cannot be predicted, and "magic" changes referred to by some popular writers are not to be expected.

A small quantity of colchicine can be used to treat a large number of camellia plants, seeds or other types of material, if applied without undue waste. Where a dipping method is used, the solution may be used more than once. Generally colchicine is used in a water solution in concentrations from as low as 0.01 per cent up to 1.00 per cent. The assistance of a druggist may be obtained in preparing desired percentages and quantities of solutions.

Universities and experiment stations in all parts of the United States have been using this material in hope

of finding new and better plants. However, for the most part, cytologists have used colchicine primarily on herbaceous plants and only in recent years has it been applied to woody or semi-woody species. Great work has been done with the African Marigold, Tobacco, Snapdragons, Mint, Pinks, Basil, to mention only a few. The woody plants now under investigation are also numerous, such as: peach, pear, apple, cherry and grape. In all of the above named flower and fruit experiments, there is a certain goal in mind: disease resistant, greater vigor, larger fruit, improved quality, larger blossoms, or making the barren productive. These goals may or may not be reached through the use of colchicine for it too depends on chance as does cross pollination or hybridization. The advantages in the use of this chemical is that the frequencies of mutation and possibilities are greatly increased.

Of course, the important factors set up as goals for a camellia breeder would be flower size and shape, color and fragrance.

### Chromosome Numbers

It was reported by L. P. Johnson in the 1947 American Camellia Society yearbook that the haploid or basic chromosome number of  $x$  equals 15. The diploid or normal number of  $2x$  or 30 was known in the following species:

- C. assamica**
- C. japonica**
- C. sinensis**
- C. reticulata**
- C. saluenensis**

Whereas Johnson reports the **C. sasangica** is a polyploid or more specifically a tetraploid (i.e.  $4x$  or 60). With the knowledge that the camellias that are commonly grown are diploid, it will be definitely interesting

to see what the polyploid varieties are going to produce. It is known that some of the tetraploid herbaceous ornamentals have produced more intense odor or fragrance than in their haploid state. Will this be true of the Camellia? This is the question that time alone will answer, for it takes considerable periods of time and patience to obtain results.

### How Colchicine Works

Colchicine has no apparent effect on non-dividing cells or tissues, so treatment is made only on vigorously growing or active plant parts. It is best applied to Camellia after the bud scales break and the new shoot pushes out. Then remove the terminal leaves if the dip treatment is to be used and submerged.

As the shoot elongates and normal cell division takes place, the chromosomes split longitudinally, and each half chromosome migrates to the opposite sides of the cell. A new cell wall forms between the two masses of chromosomes and two daughter cells are formed. Each of these daughter cells have the same number of chromosomes as the mother cell. If, on the other hand, colchicine is present in the dividing cell, the split chromosomes do not migrate to the opposite sides and the division of the cell is prevented. In this way, this material prevents cell wall formation and causes doubling of the chromosome number that was found in the same cell previous to treatment. After doubling takes place the growth or elongation is very definitely slowed. In many cases it takes a number of months for growth to be resumed. If camellias are treated during the second flush of growth, activity may not be resumed before the following spring. After the cell chromosome number is doubled the cell can divide normally to form daughter cells with the double number of chromosomes.

### Treatment Methods

Success in the treatment of growing material is based on the principle that the chemical should reach the regions of rapid growth; therefore, the manner of treatment depends upon the type of material to be treated.

### Camellia Seeds

Since camellia seeds are fairly slow in germinating, it is best to germinate the seeds in a jar filled with damp peat moss. (As has been discussed in a prior bulletin.) At the time when the root is 1 to 2 inches in length, drop the whole germinating seed into a solution of 0.2 per cent colchicine and leave for about 12 hours. If treatment is extended to 24 or 30 hours, the plant material may be killed. Such treatment will normally prevent rapid germination from this point, but the plants can be carried on with care. The treated seeds should be taken from the solution and planted directly in sterilized soil. If any of them show a thickened growth either as sectors or the whole shoot, these are the ones that should be watched particularly.

### Camellia Seedling Treatment

Establish the young seedling in 3-inch pots as soon as possible. When the young camellia is growing rapidly once again, the leaves should be removed to facilitate insertion in a small vial. In order to keep the soil in place during treatment, a circular piece of cardboard may be cut and placed over the top of the pot. After the leaves have been cut at the petiole and the cardboard is in place, the pot may be inverted and the growing shoot placed in a small vial of the colchicine water solution of between 0.2 and 0.8 per cent. A small amount of Sento-merse may be added at the rate of 2 to 6 drops of 10 per cent solution to each 10 cc. of the water colchicine solution. This is done in order to make the colchicine pene-

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## THE CAMELLIA

By E. H. Carter, Carter's Camellia Gardens,  
Monterey Park

Your Program Chariman introduced me as a camellia expert; but I want to assure you that there is no such animal as a camellia authority.

Even the most experienced camellia growers are not really experts. We know tentatively a few things about camellias. When I make assertions and recommendations to you, I should like you to understand that these are tentative, although they are the result of a good many years of experience.

### Root Systems of Camellias

The first set of slides that I shall show tonight are the more utilitarian, covering root-systems of camellia plants. Some I consider poor; others excellent types of camellia roots.

When you buy a camellia in a can you are likely to judge it by its top; but the best top in the world, with a poor root-system, is a poor investment. With a good root-system you can build a good top. Some of the plants photographed on these slides were dumped out by camellia growers. Others are dead plants that were brought in. Another is one that I obtained from another nursery because I did not have the variety the customer wanted.

The first slide shows the evolution of a faulty type of root-system. The plant is container grown, starting with a 2½-inch pot and kept there until the roots had become hardened and woody. The compression of the cambium tissue interferes with the circulation of the sap and the result is an enfeebled root-system. As the roots become larger, the pressure becomes greater. In this case, fungus from the soil entered and root rot developed, killing the plant. The nursery which sold this plant was reputable, but their hired workers had not taken the trouble to repot and spread out the roots to prevent that

turning, which resulted in a bad distortion.

The next slide shows badly tangled root-systems in which the roots press against each other and cut off the flow of the sap. I bought three plants of a very fine variety in 4-inch pots while on a trip in Oregon. When I transplanted them, the roots were so tangled that I could not separate them. Two of the plants were killed by a stoppage of sap circulation.

Now we come to a *Reticulata*, grafted onto a root-bound understock, which a man bought from a reputable nursery for fifteen dollars. When he removed the can, the soil dropped off, leaving a root-ball the shape of a 2½-inch pot. He set the plant out and of course it died.

The next slide shows a cutting-grown root-system. Sometimes a cutting will send down a tap root. A seedling always sends down a tap root. At present there is a debate on as to the desirability of a plant with a long tap root. If a small plant with a tap root is not kept in a small pot too long, there is no danger of damage to the root-system. These are pictures of some plants that I received from the Deep South. There they grow camellias in nursery rows and ball them out. These plants did not have enough root-system. I should like to warn you about balled plants that have been dug from the ground. To cut down express charges there has been a tendency to take less and less dirt and cut off more and more of the root-system. I will not buy a balled-in-burlap plant from the South if I can get the variety some other way. I would prefer to get scions from down there.

The next pictures show a more desirable type of root-system, where the roots are widely spread and are not running around the root ball.

These were grown in such a way that they do not get pot-bound; but that is a trade secret. The second photograph is a cutting-grown plant that has a main root that goes down like a tap root from a seedling. The next photograph shows the main root-system running out of the side. It is a perfectly good root-system although too wide. But it is well spread.

### Camellia Culture

For ages the ancestors of modern camellias grew wild on mountain or hillsides—THEY WERE NOT SWAMP PLANTS—and be guided in your planting and treatment by that fact. Those ancestor plants had:

1) GOOD DRAINAGE, which is absolutely essential. Never plant a camellia where water stands or under eaves or near down spouts.

2) ROOTS NEAR SURFACE. The top soil on mountain or hillsides washes away continuously, so roots are near the surface. To simulate this condition, **don't plant deep**. One-half inch from surface to roots is good. If roots are somewhat exposed to air, they are not injured.

3) NO ALKALI on mountain or hillsides, so provide a **slightly acid soil**.

4) LEAF MOLD. Fibrous material in woodland soil lightens it, provides aeration, penetration of water and acidity.

5) SOME SHADE by larger trees. Most camellia plants like partial shade.

### Fertilizing

Begin fertilizing the first of March. I like to apply fertilizer so that it can be taken up by the plant and be stored in the limbs; then when the impulse to grow comes, they can burst forth with growth. I have advocated a small amount of fertilizer at a time. I think it is better to supply a somewhat uniform amount of plant food instead of giving too much at one time. Heaviest feeding should be given about the first of March be-

cause most of the plant food has been washed out by winter rain; then lighter feeding first of April, May and June; and then one or two light feedings in late fall or early winter. I don't recommend fertilizing late in the summer except on smaller plants where growth rather than bloom is desired. Root growth does not stop when top growth stops. A little plant food then will add growth and probably increase somewhat the size of next year's bloom.

### Discoloration of Foliage

Every type of discoloration of camellia foliage has meaning. Some discoloration is perfectly natural and harmless. Other types are objectionable.

The first slide shows absence of chlorophyll, which is likely to occur in any variety of camellia, but in some, more than others. For example: Daikagura. We don't know why the chlorophyll is not sent up into the leaves. There are various theories regarding this. There is a virus theory; but that means disease, while these leaves seem perfectly healthy. Sometimes the first growth in the spring will show this variegation and the second growth will be green. The yellow portion of the leaves will not stand the sun. Daikagura with some yellow in its foliage should be shielded from sunlight.

A lady came into the nursery with foliage that had a mottled appearance. Those were old leaves getting ready to fall off and be replaced by new leaves.

The second slide shows a condition with which we need to become familiar. It is the result of **too much alkali** in the water. The veins of the leaf remain green, but between the veins there is a yellowing, and later the leaves develop brown spots in the midst of the yellow. That is a sure symptom of **alkaline injury**. The old remedy was agricultural sulfur. In using sulfur, I would say that be-



fore you set your camellias out, you scatter  $\frac{1}{8}$ -pound per square yard of surface. Then dig down deep and mix it in thoroughly over quite a wide area of surface. Don't use too much because you can kill your plants with sulfur. This is a long-time, long-range remedy.

But for immediate satisfactory results I have used a mixture of ferrous sulphate (iron sulphate) and magnesium sulphate (epsom salts) sold under the trade name "Acitate"; or you can buy the two ingredients in powder form and mix them, about two parts of ferrous to one of magnesium sulphate, dissolving about a heaping tablespoonful of the powder to every three or four gallons of water and soak the soil deeply and over a quite large area around the plant.

The next slide is quite different. Not only the veins of the leaves remain normally green but the fabric of the leaves between. But there starts in a blackish-brown at the tip of the leaf which spreads down the edges. This is a symptom of **too much fertilizer**. Note that this is different from the preceding slide in that there is no yellowing between the veins. Presently those leaves will drop off, leaving long, bare stems. The remedy for that is simple. When your coffee is too strong, dilute it. When the fertilizer is too strong dilute it. Use water to leach out the soil. Allow the plants to come back to normal moisture after 8 to 12 hours of drenching. But do not repeat the drenching for you will get into trouble then by treating camellias as swamp plants.

The condition shown in the following slide has alarmed many people; but this is merely **sunburn**. Evaporation of sap from the leaves takes place faster than moisture is brought up from the roots, when the rays of the sun come in perpendicular to the leaf surface. Occasionally there is a case where soil around the roots has

become too dry. This is what I did to prevent sunburn: I reasoned that if we were to prevent that evaporation, the first thing to do would be to lower the temperature; the other would be to increase the humidity. I violated all my teachings as a youngster that you must not wet foliage when the sun is shining on it. At noon on one of the first of three or four hot days, I turned on the overhead sprinkler-system in the lath-houses for a minute or a minute and a half until the foliage was dripping water, but before the water had gone into the containers. The ground, however, had become soaking wet. The next morning the plants looked as though they had grown 2 or 3 inches. Then each day when there was hot weather I had one of the men turn on the sprinkler-system for a minute. That was the first year High Hat had been put on the market by Coolidge. At Coolidge's nursery I had a hard time finding a High Hat that was not badly sunburned, and sunburned leaves are not good for cuttings. The next year Coolidge put in an overhead sprinkler system for most of the camellias.

The next photographs illustrate a camellia blight prevalent in the south called **die-back**. The fungus gets underneath the outer bark and gradually girdles a limb or a plant, stopping the flow of sap and killing the plant. One day a camellia plant will look all right and the next day it may die. Spray with bordeaux mixture and cut infected parts back to healthy wood. Be sure to disinfect your knife and burn infected wood, otherwise the blight may be carried from the infected portion to the healthy part. I take the plant and soil and everything and put it in the incinerator. In the South, moisture and warmth combine to spread this blight.\*

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## TRANSPLANTING

(continued from page 4)

Next you dig a hole. If the soil which you remove is good enough, mix it with peat moss and leaf mold. But if the soil is poor, discard it entirely and prepare new soil.

After digging the hole, fill it up with soil mix to a depth where you think the plant will set well. Tamp the soil down. Of course, if the plant is pot-bound, it is necessary to break the roots loose gently at edge and at bottom of the root-ball. Then set the plant in the hole, and put in soil mix. Firm the soil in just as I did when repotting the Strawberry Blonde.

I would place the plant 1 to 2 inches higher than the surrounding ground. This allows for settling during the first six months. If the camellia is planted just at ground level, it will settle as the soil firms and will be planted too deep. It is better to plant it up a little above ground level and allow for settling.

Tie the plant to a stake so that it cannot be easily knocked over or whipped back and forth during a wind storm, causing the plant above ground to rock the root-ball. Leave the stake on for a year or two until the roots have taken hold.

**Question:** Suppose you have poor soil; how much larger would you make the hole?

**Answer:** If the soil is really poor, I would make the hole 3 feet wide and perhaps 2½ to 3 feet deep. Then buy good soil and fill it in. It will take some time before the roots will take in all that soil.

**Question:** Would you use rocks for drainage if the soil is poor?

**Answer:** If there is not good drainage, I would use rocks in the bottom of the hole.

### Transplanting From Garden Back Into Containers

Transplanting from the garden back into containers may sound funny;

but very often people are doing that very thing: taking camellias out of the ground and putting them back in containers.

If you are going to move from your home it is advisable to take the plants out of the ground and transplant them in containers at the proper time, during the dormant season. Don't wait until June or July or August if you are going to move during those months. You will not have the success with your transplanting that you would have if you transplanted to containers during the dormant season.

Usually all that is necessary with small plants is to carefully pick them up with the shovel and surround them with a good potting mix in the container.

If the plant is larger and well established, it will have to be balled and burlapped and then put into the container and surrounded with potting mix without removing burlap.

**Question:** Do you put fertilizer in your potting mix?

**Answer:** Some people and a few growers prefer to put fertilizer with the potting soil. It is very easy to burn the roots by putting too much fertilizer in the potting mix. If you add fertilizer to the soil mix, as soon as you water, the roots are going to get the fertilizer. I would recommend putting some fertilizer in the soil a month or so before transplanting. I think a 3-inch potful to a wheelbarrow load would be small enough to use. Some people recommend a 6-inch potful to a wheelbarrow load; but I think this is too much. Others use manure; that is all right if it is old manure.

**Question:** How about some sulfur?

**Answer:** I have never used sulfur. Sulfur must be used very mildly, sparingly, to get good results.

**Question:** In lifting plant from the garden to put it into a tub, how far from the main stem do you dig?

**Answer:** That depends. Suppose the plant has been in the garden two years and has not done well: then it has not gone much beyond the 3-gallon size that you originally put into the ground. On the other hand, if the plant has been in the ground for quite some time and the roots are out a ways, you would go out a little further from the main stem. You have to cut some roots or you wouldn't be able to lift the plant.

### **Transplanting From One Location In The Garden to Another Location**

Transplanting from one location in the garden to a different location in the garden is an important operation and is done frequently. Here are some reasons for transplanting: perhaps the plant is not doing well in that particular location; maybe it is in too shady a spot; or maybe the wind blew down the tree that had produced the shade; or maybe it will fit into your landscaping picture better in some other location.

The proper time to perform this operation is during the dormant season, from November 1 to March 1, all the way through the blooming period. I prefer to do it early in the season, in November or December, for that gives the transplanted camellia time for new roots to form before new growth starts; that is, it is established by the time new growth starts.

Now I shall show you how to ball a plant. Most people think it is an easy operation. It is easy if you know what to do. You might have only to lift the plant up with a spade and carry it to its new location. But if the camellia is 10 to 12 years old, the roots have gone out so far that it is necessary to cut quite a few of the roots in order to get a root-ball small enough to handle.

The plant that I am using in this demonstration happens to be a Francine that I took out of a 3-gallon container this afternoon; but we shall pre-

tend that the plant is growing right in the ground where it sits now. This is the way I go about it in the nursery. Say it is a 10, 12, or 15-year-old plant. The first thing I would do would be to take off the mulch on the ground around the plant. Scrape it off and put it to one side and see if you are down to fibrous roots. Take soil off until you see roots of the camellia. You don't want to make the root-ball any heavier than necessary.

Now take a piece of twine and put around the trunk, leaving one long end, about the radius of the root-ball you are planning to take. Tie a tennypenny nail at the end of the twine. Now take hold of the nail, pull the twine tight, and using this twine length as a radius, describe a circle by letting the nail cut into the surface of the ground. Using this circle as a guide, you should be able to get an even amount of roots all the way around the plant.

In using a spade to cut around the circle, never hold it toward the plant and pry against it; instead, hold it away from the plant to keep from breaking into the ball and loosening the earth in the root-ball. So remember, never poke the point of the spade or shovel into the root-ball; but always pull it away from the ball. Now take the spade and force it down with your foot all around the circle. In pulling spade out, place foot on ball to prevent earth coming up with the spade. Then dig a trench around ball, always digging away from ball until you are down far enough to undercut.

Before you undercut, the best procedure is to put a gunny sack all the way around the top of the ball and tie it securely around the lower trunk. Then take cord and come around the root-ball once; then come around once more a little lower; now you have a double hitch around the ball.

Then you are ready for undercutting. Begin undercutting on side of

ball with biggest amount of sack. Pull sack up out of the way and start undercutting. When about half undercut, take sack and roll it up or bunch it up underneath the root-ball. Now you have the sack shoved underneath good; then take shovel on opposite side and get as far underneath as you can and pry up, making sure that you cut all of the roots. Have shears on hand, ready to cut any roots that hold. If some roots hold, the ball will break. It is good to have plenty of room to work in that trench you have dug around the root-ball. Then pull sack from underneath to meet sack on other side; then bring twine underneath and up to top. In passing twine around ball, when you come in contact with twine going the opposite direction, take a half-hitch and pull gently until tight. This is important as it tightens ball. Now take twine down opposite side and underneath and up to top and tie securely.

You are then ready to lift the root-ball out of the hole. Take another sack and put it under the ball for the purpose of carrying it. Then move camellia to new location and plant without removing the burlap.

**Question:** What about cutting roots?

**Answer:** We were pretending this was a 12-year-old plant; the roots were probably way out. You have to cut some of those roots in order to get a root ball light enough for a man to lift and handle to get it to the new location in one piece. You should do it without cracking the root-ball.

You will be surprised how soon fibrous roots will form, and they will eventually become big roots.

**Question:** Do you prune plant at this time?

**Answer:** No.

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The above talk was given at the January 3, 1949 meeting of the Northern California Camellia Society.

## USE OF COLCHICINE

(continued from page 6)

trate and wet more thoroughly. This treatment should last from 12 to 96 hours. As yet no definite data has been established as to the duration and concentration that should be used.

Another method of treatment at the seedling stage is employed at the time of transplanting the seedlings from the flat to the pot; that is, if done during the growth periods. Place the roots in a strip of absorbent cotton wet with water and roll into a bundle. The cotton prevents drying and also forms a plug that will fit into the mouth of a small vial.

The bundle of plants is then inverted and placed in the vial with only the stem ends immersed or in contact with the water solution of the material. If treated in this manner, keeping the roots moist and unaffected, the high mortality rate will be less than that which usually follows the treatment of the whole seedling.

### Treatment of Growing Shoots and Buds

Tips of rapidly growing shoots on mature plants or seedlings may be treated by brushing or dripping a drop or more of the solution on the exposed tips, one or more times, or by immersing the growing point in a solution for a number of hours. Growing tips may also be smeared with a mixture of 0.2 to 0.5 per cent colchicine in hydrous lanolin. In order to facilitate penetration of the solution the wetting agent mentioned above or a detergent should be employed. The solution of colchicine may be used in a 10 per cent water solution of glycerine to aid in adherence.

Most of the work conducted by the writer has been with seedling Camellias. This was done in order to try to find the optimums and the limitations in treatment. The mortality

rate has been very, very high on the treated plants, even with solutions as low as 0.2 to 0.8 per cent. However, with these concentrations at the lower duration treatments mentioned, a good per cent lived. Now the important problem is: are the chromosomes doubled? Many times there are no outward symptoms. Also with those that survive the treatment, there may be no doubling, yet the plants do not resume growth immediately. So, as mentioned above, only time will tell.

It is believed that through the use of chemicals the chances are much greater of obtaining something worthwhile than with the 1 to 10,000 chance with open pollinated seedlings.

It has been said many times that when a person starts propagating and grafting Camellias, the "Camellia Bug" has bitten him. In qualifying this statement, the "Fanatic" stage is reached when the "Camellia Bug Bitten Man" starts to raise seedlings from his own cross-pollinated flowers, and through the use of chemicals, he is able to build bigger and better castles in the sky.

**Extreme care should be taken while using colchicine in order to avoid drastic results, for this material is poisonous. If the skin should come in contact with it, wash immediately with soap and water.**

## CAMELLIA SEEDLINGS

### Camellia Seedlings Developed In Huntington Botanical Gardens

(Registered with Southern California  
Camellia Society)

Margarete—October 13, 1944

Robert Casamajor—February 24, 1949

Doctor McLean—February 24, 1948

The above camellias were selected from a great number of chance seedlings gathered from beneath mother-plants. They are described as follows:

**Margarete Hertrich** produces formal, imbricated flowers 10 to 12 cm. in diameter; number of petals ranges from 50 to 70; occasionally a few yellow anthered stamens are displayed. Color, pure white; flowers lasting; shy bloomer in its juvenile stage.

**Robert Casamajor** is a semi-double flower, similar to Mme. Jannoch \*(which was among the mentioned shipment from Japan); but a deeper crimson and the petals often more numerous. The cup-shaped flowers hold their color well and do not become purplish with age.

**Dr. McLean** flowers densely double-shaped; 8 to 12 cm. in diameter; 5 to 6 cm. high. Bracts and sepals pubescent; floral petals vary considerably in shape, the outer ones the largest. Petals number 40 to 50; petals often twice as many.

\* See page 5 of June 1949 issue of Bulletin.

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### Selecting Varieties to Spread Bloom Over Long Season

It is possible to select varieties of camellias that will spread bloom over a long season. To illustrate, I shall show slides, divided into color classes, beginning with the first to bloom and proceeding to midseason and late bloomers under each color.

#### White Blooms

SEPTEMBER MORN—I had this variety as an unlabeled plant for five years and was trying to find a suitable name for it. One day I said, "This variety comes out nicely in bloom by September; at first it is white and then blushes about it, and I am going to name it September Morn."

A few days later Gordon Court-right of the East Bay Nursery in Berkeley came down to my place and asked me to go with him down South to the Gulf Coast. The first nursery we visited was Flowerwood, which Judge Smith had built for his son. While showing us around the nursery, the manager said, "Tell Mr. Carter about that early camellia you are propagating."

"Yes," said Judge Smith, "it is by far the earliest to bloom and I have decided to name it September Morn."

Since then another nursery gave it the name Albatross; but I believe that bird was supposed to be snow white while this takes on a blush-pink after it has been open a while. This variety is often called Yohei Haku, but I understand from Toichi Domoto that this is a misnomer, for the real Yohei Haku is a distinct variety. ALBA PLENA is the next early white. FIMBRIATA is the fimbriated form of Alba Plena.

ABUNDANCE—I called this variety Abundance because it is an abundant bloomer, not knowing at the time that there was already a white variety under this name in the deep South. The flower retains its closed rosebud-like center for three or four days and

then shows stamens. It is a lovely corsage flower.

FRIZZLE WHITE is one of K. Sawada's seedlings (Overlook Nurseries, Mobile, Alabama), and a fine example of the lovely new type having long fluted petals and petaloids.

WHITE EMPRESS too is one of K. Sawada's seedlings and is somewhat similar in form to Frizzle White.

MARGARETE HERTRICH is a seedling from Huntington Botanical Gardens in San Marino and is named after the wife of William Hertrich, Curator Emeritus. The flower is a complete-double, fully imbricated pure-white. It is a thoroughly lovely flower of good substance and does not shatter easily. Margarete Hertrich should be added to any collection.

PAX is a white sport of Laurel Leaf. It is an exceedingly lovely fully-imbricated flower, not shaped exactly like Laurel Leaf. Add this to your collection; it is a must.

LOTUS is a snow white, extremely large semi-double with broad and somewhat crinkled petals, opening wide, suggesting a rare water lily. It is exquisite in flower arrangements.

WHITE PERFECTION is medium in size, completely double, regular-imbricated.

IMURA is another K. Sawada seedling; a water-lily type with long, narrow petals.

MATHOTIANA ALBA is a lovely, very late white, massive, fully-double regular-imbricated; a delicate pink petal in an occasional bloom. Should be planted in a cool location.

DAIKAGURA WHITE—In a year or two we shall have a snow-white Daikagura. I have been privileged to photograph it and I can assure you it is one of the loveliest of the whites.

#### Red Blooms

IMPERATOR—Very large Christmas red; peony type.

MRS. CHARLES COBB—Large, rich dark red, peony type. Very fine. Vigorous grower.

FLAME (Domoto introduction) Deep flame red semi-double.

FIMBRIATA SUPERBA Vermillion red. Large, semi-double with curled, deeply fibrated petals.

ADOLPHE AUDUSSON RED—Dark rich red, veined deeper red. Very large semi-double.

MATHOTIANA (Julia Drayton) Extremely large, to 7 inches in diameter, incomplete-imbricated double with high center, opening later to show stamens; rose red, petals sometimes shading to purplish on outer edges. Spectacular.

BLACK DRAGON—Very dark red. Large, incomplete double with large petals, showing stamens.

GLEN 40—Deep red. Formal to incomplete imbricated, showing a few stamens in the center after opening.

MONARCH—Very large full peony type, multiple center; red, sometimes slightly clouded.

C. M. HOVEY (Col. Firey) A family living at Pomona had a large plant of

this variety in their yard, but did not know what it was, so they called it Col. Firey for the husband. The original name was C. M. Hovey. Dark red; large, formal double.

TE DEUM (Dr. Shepherd) Gorgeous red. Very large, to 7 inches in diameter. Many blossoms will remain completely closed with rosebud center; others will open and show stamens. Small plants do not show many bloom buds.

ST. ANDRE Maroon red. Very large, with tufted center. Best extremely late red.

KURO-TSUBAKI—Outside of petals blackish wine-red, inside of petals very dark vermilion red, netted veining, almost black. Nothing else like it. Would be interesting to cross it with Glen 40 to get a rich dark red.

Mr. Carter's suggestions for Pink Blooms and Variegated Blooms will be given in the next issue of the Bulletin.

The above talk was given at the December 6, 1948 meeting of the Northern California Camellia Society, Inc.

## CAMELLIA FLOWER CLASSIFICATION

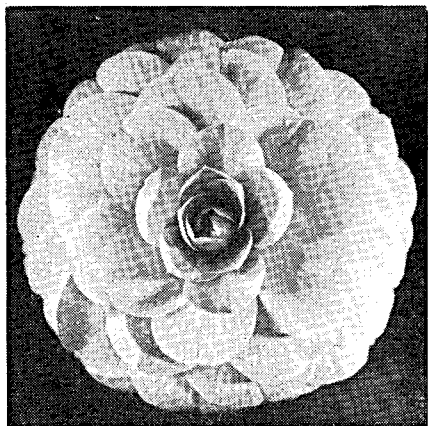
The Camellia Flower Classification listing which was given out prior to the 1949 Annual Camellia Show is in process of revision. Please mail your corrections on or before October 15, 1949.

**BARLOW W. S. HOLLINGSHEAD**

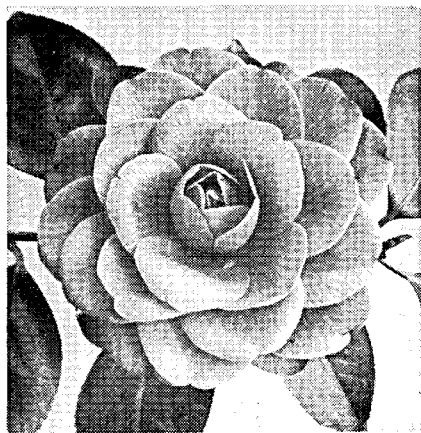
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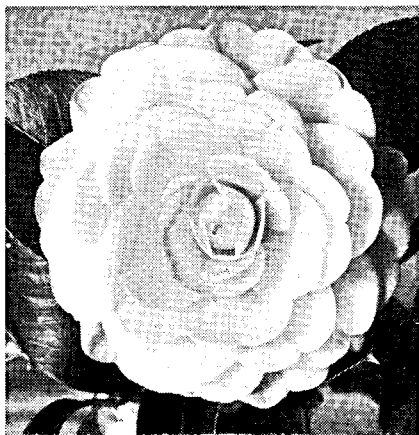
Orinda 2, California



**SILVERY PINK** Silvery pink, medium-sized complete double regular imbricated; compact upright grower.



**GLEN 40** Large, deep-red double blooms with scarlet undertones, regular imbricated or incomplete imbricated.



**ELEANOR HAGOOD** Pale pink, late-blooming, from incomplete double with large petals to complete double regular imbricated.