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Southern California Camellia Society Inc.

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2203 W. 21st St., Los Angeles

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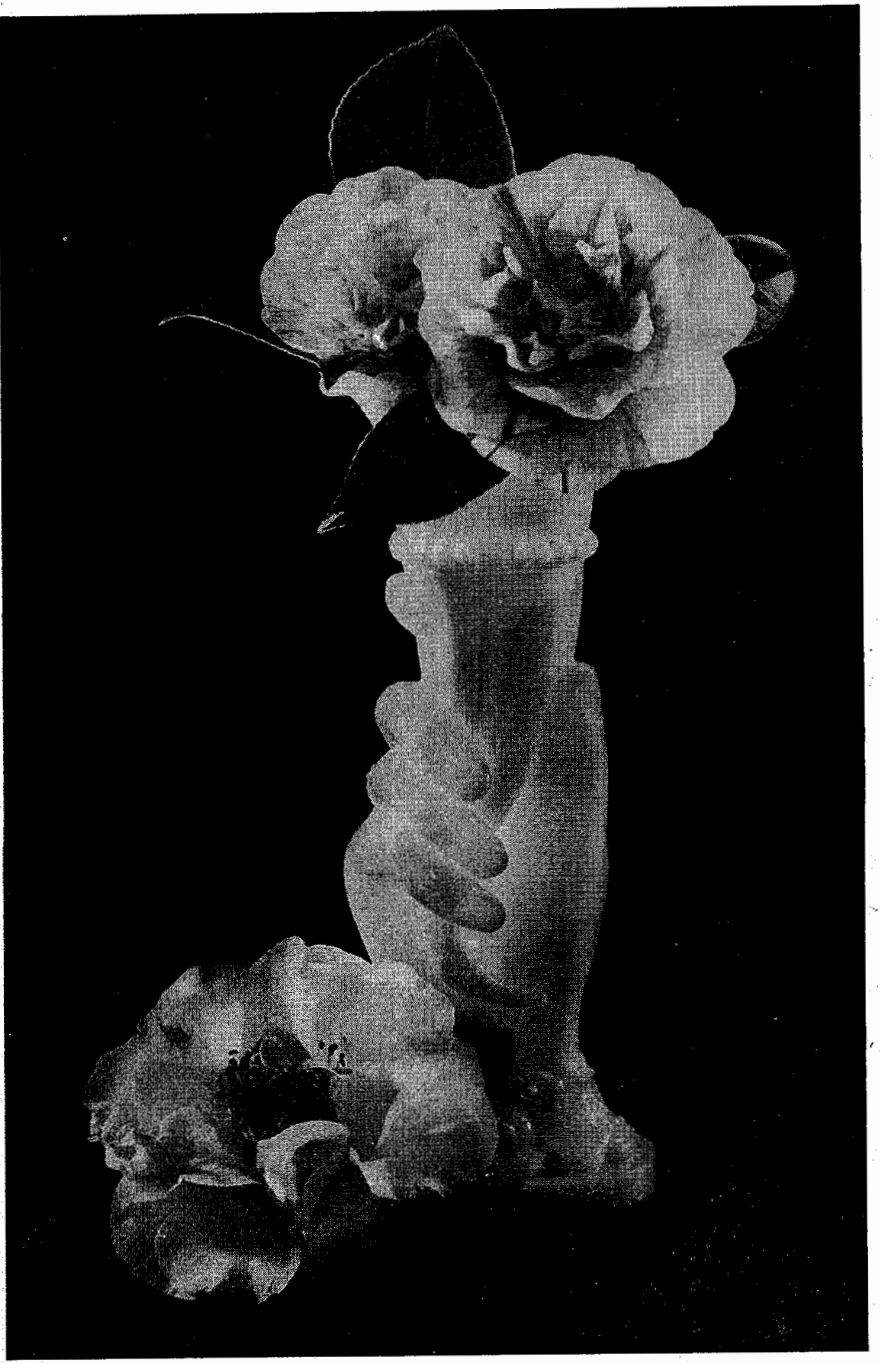

Mrs. Paul J. Howard Photo

TWO HERMES AND A FINLANDIA, PLUS AN UNUSUAL VASE, MAKE A SIMPLE BUT EFFECTIVE AMATEUR ARRANGEMENT.

George E. Herrick photo—Courtesy "Home Gardening."

TYPICAL CORKY GROWTHS OF THE LEAF SCURF ON THE UNDERSIDE OF EMPEROR OF RUSSIA FOLIAGE.

A NOTE ON CAMELLIA SCURF

By A. G. Plakidas

In the 1948 *American Camellia Yearbook,* pp. 110-113, the writer described and illustrated six different types of scabby spots on camellia leaves, as they occur in Louisiana and the Deep South in general. These scabby lesions vary greatly in their appearance. Some are black and others snow-white; some are large and angular in outline, and others equally large but circular and provided with concentric cracks. Some occur typically on the upper and others on the under surface of the leaves. One type of spotting, designated in the above article as "Corky Excrescence," and which, in California at least, is known as "Scurf,"[1] is of particular interest, and is the subject of this discussion.

Scurf is characterized by raised, corky outgrowths, typically on the under surface, although occasionally some corky spots may appear on the upper surface of the leaves. The corky spots may occur in small groups, or may cover large areas. They are usually irregular in outline, but sometimes appear in line or angular patterns. On some plants (*C. reticulata,* for example) the corky outgrowths may follow the margin of the leaves.

In Louisiana, the various types of scabby lesions on camellia leaves, including the "corky excresence" or "scurf," although differing greatly in appearance, have this in common: a fungus, *Sphaceloma* sp., is isolated when bits of leaf tissue, cut through the scabby spots, are placed on a suitable culture medium. It should be stated here (1) that members of the genus *Sphaceloma* are proved parasites, causing diseases known as "scabs" on a large number of different plants, and (2) that no saprophytic (non-parasitic) Sphacelomas are known. It was, therefore, logical to assume that the presence of *Sphaceloma* in the scurf lesions on camellia leaves was a strong indication that this fungus was the cause of the disease.

At the same time, it was appreciated that the scurf behaved more like a physiological disturbance than a parasitic disease, as indicated by the following statement by the author in the article referred to above:

> The corky excrescence type is particularly puzzling. The way it breaks out rather suddenly, often occurring on every leaf of a plant, suggests a physiologic disturbance rather than a parasitic disease; however, the writer has obtained a large number (78, to be exact) of Sphaceloma isolations from such material from different sources, and it is not reasonable to assume that the fungus occurred there as a saprophyte.[2]

Since the preparation of the article for the *American Camellia Yearbook,* additional information has been obtained. When the writer learned that apparently the same disease occurred in California, where climatic conditions are different from ours, he was anxious to obtain and study diseased specimens from there, reasoning that, if the same fungus were found associated with the disease in California, it would be supporting evidence that it was the cause of the disease. Accordingly, scurf specimens were obtained from California through the courtesy of Professor H. N. Hansen of Berkeley and Claude Chidamian of Los Angeles. All attempts to isolate the *Sphaceloma* fungus from the California specimens failed. In parallel tests, made at the time with specimens

[1] C. Chidamian, "The Camellia Leaf Scurf," *Home Gardening,* VIII (September 1948) 201. [The term "Scurf" was first applied to this disease by the author cited. It was simply a descriptive label invented to serve until the true name of the affection (if any) could be found.—Ed.]

[2] A. G. Plakidas, "Camellia Scab," *American Camellia Yearbook* (American Camellia Society, Gainesville, Fla., 1948), p. 112.

from Louisiana and using the same technique, several isolations of the fungus were obtained.

What do these findings mean? Do they mean that the California disease is different from that occurring in the South? The writer does not think so. The symptoms are identical and the disease is certainly the same in both regions. The explanation is probably this. In the South, in addition to the scurf, several other types of scabby lesions occur on camellias and these are caused by *Sphaceloma.* Quite often, some of these other types occur on the same plant, and even on the same leaf, together with scurf. Therefore, it is possible that the *Sphaceloma* fungus may be present within the tissue of a particular area of the leaf on which the corky scurf lesions have formed. If sections of the corky lesion from this particular area are placed on a suitable culture medium, the fungus will grow and will be isolated even though it had nothing to do with the production of the corky lesion.

As far as the writer has been able to learn (from correspondence), the other types of scab which are common on camellias in the South do not occur in California.

Other experimental evidence obtained this year also indicates that *Sphaceloma* is not the cause of scurf. Repeated inoculations with pure cultures of the fungus have failed to produce the disease. (Some infection was secured, but the symptoms were not those of scurf.)

This brings us back to where we started. The cause of scurf still remains unknown. Several theories have been advanced to explain the cause of this abnormality, none of which is backed by experimental evidence. Tompkins blames it on too much lime (high alkalinity) in the soil.[3] This view is not tenable. The disease occurs in the South on soils low in lime and definitely acid. Sibilia, describing a corky-pustule disease on camellias, similar if not identical with scurf, states that this condition is normal for camellias, that the corky outgrowths originate from stomata (breathing pores), and that it has some connection with transpiration or respiration.[4] Alten and Jännicke describe a condition on camellias characterized by raised pustules (not cork) on the underside of the leaves which they attribute to water-soaking of the cells and claim to have reproduced it experimentally by placing potted plants under glass jars and watering heavily.[5] Chidamian also attributes scurf to "excessive watering and humidity" among other possible contributing factors.[6]

Oversupply of water and high humidity do not appear to be the causal factors by themselves. During the course of inoculation experiments, the writer has subjected many camellia plants to excessive humidity by placing them under bell jars and watering heavily for several days, but no scurf developed. Fluctuations in water supply will probably be more important in influencing transpiration than excessive moisture. The possibility of lack or excess of some micro-nutrient element cannot be excluded. Neither is it inconceivable that a virus is involved. But all these are mere guesses. Until positive experimental evidence is forthcoming, we may as well admit that the cause of scurf is not known.

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[3] C. M. Tompkins, in "Camellia Notes," *Sunset,* XCVII (December 1946), 90.

[4] Sibilia, "Suberosi di foglie di camellia," *Bol. R. Staz. di Patol. Veg.* (Rome), IX (1929), 163-170.

[5] H. Alten and W. Jannicke, "Krankheitserscheinungen on Camellia japonica L.," *Gartenflora,* XL (1891), 173-176.

[6] Chidamian, *loc. cit.*

SINGLE JAPONICAS

By William E. Woodroof

The single varieties of the *Camellia japonica* have been many and varied throughout the years of cultivating the species. This has probably been due to the fact that in the propagation of camellias from seed the usual result is a single flower.

In the Orient, the ancestral home of the camellia, singles have always been highly prized. But during the early years of the propagation of the camellia in Europe and America, the emphasis was on the formal type flower. Indeed, one of the principal reasons for the camellia's decline in popularity in Europe, around 1860, was the overemphasis placed on this formality. Since that time, the single and semi-double forms have come into their own.

The single camellia has always been more favored in the South than on the Pacific Coast, where the preference has been for formal and peoniform flowers. Probably one reason for this is that the singles open more readily in the colder climate than the fuller forms.

During the past few years the popularity of the singles seems to be increasing everywhere. This is not difficult to explain, for the single camellia is generally a vigorous grower, blooms readily while young, is dainty and lends itself admirably to flower arrangement work, produces seed in quantity, and blooms well under adverse conditions.

It is true that the single is generally not a long lasting flower, but for its daintiness and simplicity, its elegance in the varied petal formations and colors, and for its vigorous growth and good blooming habits, may I recommend it to you.

On the Pacific Coast some of the more popular varieties are as follows: AMABILIS (White Poppy, Subije, Mrs. Francis Saunders)—A medium size white with petals having slightly ruffled tips and opening flat. It shows a heavy cluster of stamens in the center. This is an old variety, but is not the one described in early camellia books. The priority name for this bloom is said to be Yukimi-Guruma. There is also a variegated and solid red form. Blooms midseason.

CAPITOL CITY—A medium large rose-red flower opening flat and showing yellow stamens in a tuft in the center. This variety was introduced in the Sacramento area. Blooms midseason to late.

CASILDA—A large bright flame pink with six large, wavy, twisted and fluted petals of irregular length. The center of the flower is filled with a large cluster of red stamens. A seedling of McCaskill Gardens in East Pasadena. Blooms midseason to late.

CLAUDIA LEA—A medium size delicate pink which is somewhat cupped. The original plant was found by Dr. H. M. Wilds and named for Mrs. Sheffield Philps. First listed by Fruitland Nurseries in 1940. Blooms midseason.

CORNIS FLORA—A medium small pale pink shaded deeper pink. A seedling of Overlook Nurseries, Crichton, Alabama. Blooms early to midseason.

DAITARIN—A large light rose pink with heavy cluster of petaloids in the center. Reported to have originated in Washington State. Blooms early to midseason.

DELECTISSIMA—A large white dashed with a wide pink stripe. A seedling of Magnolia Gardens, John's Island, South Carolina. Blooms early to midseason.

FAVORITA (Cannon Ball)—A very large light pink. A seedling of Magnolia Gardens. Blooms early.

HIBISCUS—A large rose-pink. From Magnolia Gardens. Blooms midseason.

JOHN ILLGES—A large, flat, star-shaped bright red. A seedling of Magnolia Gardens. Blooms midseason.

KIMBERLEY—A medium size bright turkey red, with red stamens tipped with yellow anthers. Introduced from England, but exact origin still unknown. Blooms midseason.

MISS SACRAMENTO—A medium large red and white flower. From the Sacramento area. Blooms midseason.

MY DARLING—A medium small light pink. This is a seedling developed in Sierra Madre, California. Blooms midseason.

PINK POPPY—A medium size soft pink with the entire flower covered with a rosette of golden stamens resembling a poppy. It is a seedling of Gerbing Nurseries, Fernandina, Florida.

RISING SUN—A large bright crimson flower with darker veins, six petals, and deep pink stamens tipped with yellow anthers. A seedling of Overlook Nurseries. Blooms midseason.

Other single varieties not so well known on the Pacific Coast, but which have been highly recommended are as follows:

ADELINA PATTI—A medium size flower, pink at the base of the petals shading to white at the tips. It is reported that this variety was imported from the Isle of Guernsey in 1917 by Mr. W. R. Coe of Oyster Bay, New York. However it is also said that this camellia was a seedling of Rev. John G. Drayton of Magnolia Gardens, or perhaps a renamed variety.

ALBA GIGANTEA—A very large pure white. Imported from Japan to Washington State, so it probably also has a Japanese name. Blooms midseason.

ALBA SIMPLEX—A medium size pure white. An old variety listed in Berlese's *Monographie du Genre Camellia,* 1837.

ALTHEA PARTICOLOR—A large, cupped, deep rose-pink marbled white and veined deep red. From Middleton Gardens in South Carolina. Blooms over a long period.

DAVE C. STROTHER (Evening Star)—A large light pink with crepe-like petals and prominent stamens. From Magnolia Gardens. Blooms midseason.

MIHATA—A large deep crimson with wavy petals which are crinkled at the edges. Of Japanese origin.

MISS DORA MCCARTER—A large, slightly cupped white with long yellow stamens. Blooms midseason to late.

MRS. DOROTHY VAN DER BOM—A large deep red. A seedling of the Portland Camellia Nurseries, Portland, Oregon. Blooms midseason.

MRS. F. L. GIBSON—A large pink and white to solid pink. Blooms early to late.

ORANDA GASSA—A large light rose-pink with fluted petals. An importation from Japan.

PATRICIAN—A large plum-colored open flower with five irregular petals, the center filled with a cluster of golden stamens. A seedling of the McCaskill Gardens. Blooms midseason.

SHOWA NO HOMARE—A very large snow-white bloom with cupped petals. An importation from Japan.

SHU BENI HITO—A medium large deep crimson with rounded petals and numerous petaloids in the center. An importation from Japan.

SOL DE ORO—A large pink with five petals and a large mass of stamens and petaloids in the center. An Oregon variety.

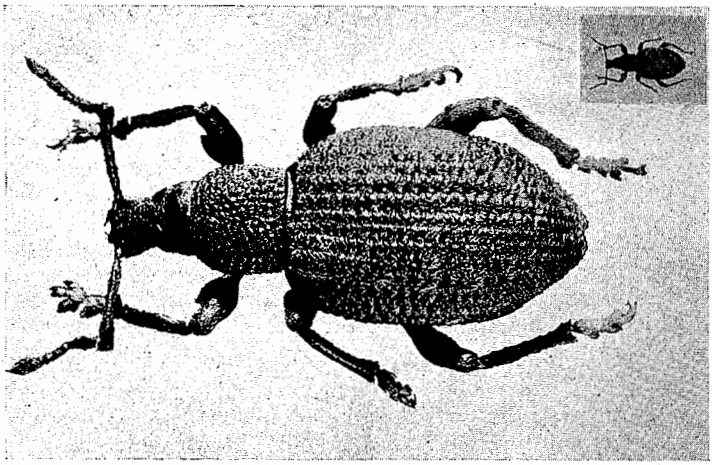
SUIBIJINE (Blushing Maiden)—A delicate pink with rounded, crinkled petals. An importation from Japan.

THE BLACK VINE WEEVIL AND CAMELLIAS[1]

By A. E. Morrison

Camellias serve as host plants to numerous species of insects, although only a few are particularly injurious to the plant. Leaf feeders of different kinds may occasionally feed on the foliage leaving behind telltale evidence in the way of holes in the leaves or eaten places along the margins. The finding of this type of injury should not cause too much alarm unless evidence points to the presence of the Black Vine Weevil *(Brachyrhinus sulcatus* Fabr.*)*. Gardeners are often puzzled as to the culprit doing the feeding, as most of the insects responsible are night feeders, rarely being found on the plant during the day. Night feeding insects rest during the day just below the surface of the ground or under leaves or trash.

The leaf feeding may be done by either the larvae (the worm or caterpillar stage of moths or beetles) or by the adult, as in the case of beetles. Leaf damage, in itself, is rarely of any importance but when we find the same insect capable of feeding on the roots as well as the foliage, its importance as a pest may be considered serious. This is particularly true with the Black Vine Weevil. The adult is a night feeder and during daylight selects a resting place that is not too wet. A wet soil surface seems to discourage the weevil which will seek a dryer condition.



Courtesy State Dept. Agri.

ADULT BLACK VINE WEEVIL *(Brachyrhinus sulcatus* FABR.*)*
GREATLY ENLARGED. SMALL FIGURE ABOUT NORMAL SIZE.

[1] Credit is accorded H. H. Keifer, Stewart Lockwood, and John B. Steinweden for reference material published in California State Department of Agriculture Bulletins; also Floyd F. Smith, *Biology and Control of the Black Vine Weevil,* U.S.D.A. Technical Bul. 325.

The Black Vine Weevil, also known as the Cyclamen Borer, is classified in the genus Brachyrhinus, which is made up of a group of beetles with an elongated snout and generally referred to as weevils. *Brachyrhinus sulcatus* is the most widely spread member of the genus, occurring throughout Europe, where it originated, and also commonly in North America. Other species occur along the Pacific Coast and sometimes are of economic importance to agricultural crops, particularly strawberries. *B. rugifrons,* the Rough Strawberry Weevil, and *B. cribricollis* are very similar in form and may easily be confused with *B. sulcatus.* They feed on a limited number of plants however, and are not too common on camellias.

The adult Black Vine Weevil measures 10.5 to 11.5 mm. (3/8 to 1/2 inch), being larger than the other species of Brachyrhinus found on the Pacific Coast.

The feeding habit of the adult weevil is peculiar. The beetle straddles the edge of the leaf, eating from the edge in. The foliage so eaten has a peculiar irregular margin with small rounded notches bitten from the edge. Where caterpillars, grasshoppers or other types of leaf eaters feed on the foliage, the holes are more regular in appearance and may take the form of a circular or oval shape either along the edge or as holes in the leaf. The main concern and serious problem with regard to *B. sulcatus* is the work of the larva, which confines its activities entirely beneath the surface of the ground.

The larva of the Black Vine Weevil is a white legless worm or grub about 10 mm. in length when mature. It hatches from eggs dropped by the adults on the soil, in crevices in the bark of plants, along stems having hairy surfaces (such as primroses), under loose bark, in crotches of plants near the ground, and any other place they may happen to lodge. When they drop into a pot or can the larvae are confined to that container and will live entirely on the roots of the plant it contains.

The larva upon hatching attempts to enter the soil. This it finds easy in light unpacked soils or in soils carrying a high percentage of humus. It feeds as it enters the soil on decayed vegetation, manure, or tender roots. It is unable to penetrate closely packed soils. General feeding is carried on underground on the roots of host plants which comprise a list of close to one hundred species, including a large number of garden favorites such as, to name a very few: camellias, cyclamens, primroses, tuberous rooted begonias, peonies, ferns, gloxinias, wisteria, privet, spirea, azaleas, rhododendrons, hydrangeas, geraniums, cineraria, berries, and grapes.

The name "Black Vine Weevil" was applied because of its occurrence in vineyards in Europe, where injury to grapes is common. It has long been a major pest in hothouses in the United States, and severe damage has occurred to cyclamen and tuberous rooted begonias grown under glass. Feeding takes place on the smaller roots, on the bark of larger roots which may be girdled, into the fleshy part of the cyclamen and begonias, and even the bark of camellia trunks just below the surface of the ground. When girdling occurs at this point the plant dies.

Larvae can be located in potted plants by removing them, intact, from the container. The curved grubs will often be found, but not all of them, on the outside of the ball immediately next to the container wall in a tunnel-like cell. Thirty-two larvae were removed from the roots of a camellia growing in a one-gallon can. This was an extremely heavy infestation.

(Continued on page 15)

CAMELLIA MISCELLANY FROM NORTH CAROLINA

By L. Dow Pender, Jr.

On November 2, 1945, I saw my first camellia in bloom. The extravaganza of Mother Nature as exemplified by *Camellia japonica* was most abidingly impressive to one of the uninitiated, namely me. Just what, the uninitiated wondered, could be done with *C. japonica* in Raleigh? (Little did I know camellias had been growing in Raleigh successfully for at least fifteen years.)

Nevertheless, there began immediately a one-man research program on camellias. First, all the advice I could glean from would-be growers was eagerly sought. Then, a cautious beginning with a few "fool-proof" plants such as Sarah Frost and Pink Perfection. I was somewhat like a stranger to Angel Food cake—first a small bite to taste, next a little smacking over the flavor, and finally the whole cake. My first few plants grew so well that a larger assortment was obtained. Some did well, some not so well. As I look back on it now, my error seems to have been chiefly in my soil and lack of planting preparation. But all the while I was avidly reading everything available which might help me to select and grow better plants and accumulate general knowledge on the subject.

The consensus of information seemed to point to certain basic soil requirements are being paramount in successful camellia culture. That was bad. The soil in my yard is a melange of rocks, red clay and pine tree roots with an ample covering in most areas of moss, indicating infertility. Since my new hobby had begun to claim quite a bit of the yard, I conceived the idea of growing the plants in containers. I know this sounds rather foolish, but I knew nothing of the methods you folks employ on the West Coast. My reasoning indicated that if the plants could be made to grow congenially in containers, then it would be a simple matter to use the proper soil, fertilize properly, and water as needed. With all this in mind, and to abet my enthusiasm, I started to talk about my plan to quite a few nurserymen in Eastern North Carolina.

The results of my conversations were most discouraging. Virtually all the men to whom I talked were of the opinion that not only were container grown plants inferior, but that it was foolish to use containers when there was so much land. Then, too, container plants had a way of becoming potbound, overfed, and easily overwatered, with disastrous results. And, that was that. Not one bit discouraged, I immediately set about in the spring to locate and purchase lots of small plants. I potted them up as I saw best and placed them under the pine trees to await results. They did beautifully, that is during summer and fall. With the advent of winter, came trouble. Some of the plants had no freeze protection, and froze to balls of ice with the temperature at sixteen. They suffered mightily. In fact, many of them died. So, I immediately built beds and plunged the others in sawdust. They all lived. That problem was easily worked out.

Next, repotting was in order when spring came about. With the potbinding in mind, I shifted into larger pots. The plants which were shifted from three-inch pots to sixes got so much water in a very rainy spell that they were severely damaged; in fact, some of them drowned. Those shifted into pots only one inch larger in diameter all lived. It seemed that I would learn eventually. So, acting on the knowledge I had accumulated, I looked about for potted plants to buy. I found them available mostly in California and Oregon.

With the plants from the California nursery came a booklet giving the necessary information about growing camellias in containers. My amazement

grew apace upon learning that entire plans of operation were devoted to plants grown in containers. If I had only known, what a lot of trouble I would have been spared. A visiting cousin from California really had a laugh on me when I told her all this.

At any rate, there is no bugaboo about growing camellias in containers. It is good. There is no mortality rate in transplanting, as all the roots remain intact; fertilization is relatively simple; and with a small overhead irrigation system, watering is easy; and I am well on my way to the commercial end of the game now with approximately four thousand camellias in containers. I am convinced, too, that potgrown camellias, now this may be debated, set flower buds younger than do plants grown in the open ground. With the above problems overcome, I have perfect confidence in the quality of the plants I am growing. There is no reason to wonder about watering, feeding, and transplanting. With regard to the last, I have seen many fine plants completely checked due to root loss in transplanting "Balled and Burlapped." I have seen others die a slow death for the same reason.

The trick of growing camellias in containers was not worked out without regard to other problems, rather in conjunction with them. One of the major questions was: What varieties? Our winter quite often witnesses twelve and fifteen degree readings, and unless some determination of the hardiness of both plant and flower bud could be reached, we might lose valuable time and plants to the frost. On this problem I could rely only to a limited extent on the recommendations of the growers. This was due to the fact that virtually all the principal growers were and are located in climates more favorable to growing *C. Japonica.* Their's could not be the positive and final test needed to ascertain the relative merits of varieties as regards cold resisting qualities.

Thus, the value of the Camellia seemed limited to the extent it would abide our cold winters. Many people write of the beauty of the shrub even without the flowers, but it is no more beautiful than many hardy, excellent and cheaper broadleaved evergreens; therefore, it is safe to assume that the reason, at least 99-44/100% of the reason, for growing the plant is for the sake of the superb and unexcelled beauty of its exotic flowers. That being the case, it would behoove us in this borderline area to pay strict attention to the best adapted and most cold resistant varieties. That is a big order. The information is badly limited, since most of the firsthand observations come from sections of the land where the climate is more eminently suited for growing camellias. So in beginning to choose varieties I hadn't too much to go on. It remained to try using the rather sketchy advice of others, my own limited judgment, and the rather incomplete information in nursery catalogs. But, here are samples of what I ran into. A lady in a nearby town insisted she had a plant of Alba Plena fifteen years old in her yard, thus bearing out the contention that it was hardy here. Yet the catalogs all regretted that Alba Plena would not stand much cold. I bought a few small plants of Alba Plena. They all died of cold injury the first winter. Next, Orton Nursery catalog stated that Ethrington White (Waterloo) was quite unable to withstand cold weather. Mr. Gerbing relates that it is vigorous and hardy. The same treatment was given to Purity. I have some plants of each, and Purity did well, Waterloo not so well. While it is true that there is quite a bit of expense entailed in the purchase of many plants, I am qualifying myself to be sure of offering my friends and prospective customers proper varietal selection before planting. In fact, it pleases me to feel that I can be of service to anyone in selecting good, hardy varieties for our section. *(Continued on page 19)*

MORE RESEARCH AT CAL-TECH

By The Interested Observer

Some years ago the Horticultural Research Committee sent out to approximately sixty prominent camellia growers, scientists, and horticulturists throughout the United States a questionnaire seeking the opinions of those gentlemen as to the influence of understocks on resultant grafts. The questions were these: Does the species or variety (not size) of understock used affect (1) the size, shape, and/or habit of growth of the grafted camellia, or its foliage; or (2) the size, structure, or color of bloom of the grafted plant?

There was every indication that the greater number of those to whom the questionnaire was addressed were just as eager to have the questions answered as was the Committee, and the spirit of cooperation which was manifested in the many answers was extremely gratifying.

The most interesting feature of the group of answers was the diversity of opinion expressed therein. The conclusions of the authors of those replies ranged all the way from a flat "no" to a resounding "yes," with almost every shade of opinion ranging between the negative and the positive. The result very clearly emphasized, perhaps more than can be adequately expressed, the wisdom of the statement that "One fact, scientifically established, is worth a dozen opinions."

But that is another story about which we shall hear more later on. Suffice it to say that although no mention was made in the questionnaire of variegation in flower and foliage (call it mottling or mosaic, if you will) many, indeed most, of the answers referred to this phenomenon; and in spite of the fact that the Committee sought to avoid any discussion of the effect of grafting on the mottling of foliage and the variegation found in the flowers of grafted plants, there was a very evident attempt on the part of those who answered to comment on the frequency with which mosaic appears in grafted plants.

Here again was found diversity of opinion. Reasons in great variety were expressed with the utmost sincerity; opinions were rife; supposition there was in plenty; and there was much suspicion expressed that mosaic is due to virus, but there was no *proof*.

Therefore, the Committee approaches the subject with the realization that not much is known about the relation, if any, between mosaic and virus, although much is suspected. Accordingly it has been determined that if possible a scientific reason shall be discovered for this frequently found mottling and variegation, and a conclusion reached as to what can be done about it. It has been discussed at various meetings of the Research Committee during the past year, with the result that at its last meeting the Committee undertook to sponsor the series of experiments hereinafter described. The California Institute of Technology, with the magnanimity and zeal which characterizes its approach to all problems for which the public seeks scientific answer, has agreed to conduct the experiments and keep the necessary records with respect to them. It is no small task as the ensuing paragraphs will disclose.

It should not be assumed that opinions of qualified growers both commercial and amateur are being disregarded or even taken lightly. In fact the very contrary is true, and the members of the Committee are among the first to acclaim the fact that it is the opinions of such men which constitute the foundations upon which the experiments are to be built. Paralleling the experimental work will be an exhaustive survey among selected growers, designed to

collect and catalog the various opinions on the subject and the evidence supporting them. But the obvious inconclusiveness of opinion alone is well illustrated by the following comments.

The opinion seems to prevail that camellia seedlings are virus free, and one well-known and highly respected grower fortifies his opinion to this effect by the statement that he has no recollection of ever having seen a mottled leaf or a variegated flower on a seedling. Another very conscientious grower, whose opportunities for observation are unquestioned, is in full accord on the leaf mottling but does not agree on the flower variegation. Both of these gentlemen are possibly correct in both their evidence and their deductions, but it *proves* nothing, and there still remains to be determined the definite cause of these phenomena. Is it virus? Is it hereditary, and thus genetic? In grafted plants is it due to the rapidity of growth during the first few years? Is it just some quirk of fate or "Act of God"? Or what is it? And if in truth seedlings are subject to virus, is that virus transmitted through the seed; is it the result of physical contact with other virus infected plants; does it result from puncture of the tissues by virus carrying insects after the manner in which malaria is conveyed by the mosquito; or how? A mere glance at these questions gives some idea of the range to be covered in seeking their answers.

The experiments to be conducted in the effort to solve these problems will consist briefly of the following activities, which are scheduled to start in January 1949.

I. *Sixty inarches or approach grafts.* For these inarches it is proposed to use as the receptor plants a solid red or "self colored" variety whose flowers and foliage have not shown variegation for several years. C. M. Hovey has been selected for reasons hereinafter stated.

The donor plants used as the "approaches" will consist of six plants each of ten well known and fairly common varieties of camellias, some one or more of which is suspected of being virus infected. They will be selected from the following varieties: Daikagura Var., Kumasaka Var., Pink Perfection, Nagasaki, Aspasia, Chandleri Elegans, Finlandia Var., Mathotiana Var., Elizabeth, Gigantea, Herme, Panache, Tricolor Sieboldi, Rosita, Valtevareda.

When the inarches are completely healed the virus suspected half of the grafts will be severed below the union, leaving both Hovey and virus suspect branches growing on Hovey understock.

The purpose of this is to ascertain whether supposedly virus infected materials used in grafting will transmit that virus to the understocks to which those materials are applied. The inarch is perhaps the best type of graft to be used in reaching this determination. There is however very respectable authority for the opinion that the so-called "spur" graft (which will live in the understock for a period of time and will not grow) is the most effective method of inducing inoculation. If it is ascertained that this type of grafting can be adapted to camellias, doubtless the spur graft will also be utilized.

If the virus is so transmitted, it is then the intention of the Committee to determine through additional experimentation whether that virus is carried through to the plants made from cuttings removed from such virus infected understocks.

II. *Sixty cleft grafts.* Six of each of the same virus suspect varieties referred to in Experiment I, will be grafted on the same self colored understocks, viz. C. M. Hovey.

The purpose of this experiment is identical with that in Experiment I, but

(Continued on page 21)

THE EDITORIAL

This is a time for resolutions. Let me share one of mine with you.

For nearly a dozen years I have been reading and writing about camellias, and growing them too. But just the other day I discovered that in all that time I had overlooked one very important thing. You see, I was so busy telling others how to grow their plants (or being told myself), that I never took time to learn—get this, it will amaze you—NATURE'S WAY OF DOING IT.

So I have decided to start all over again, to stop playing God with my experiments trying to make the camellia grow my way instead of the way it was meant to grow. Indeed, from my many errors I have concluded that all camellia collections should be made twice: once to make mistakes and once to correct them.

To understand the culture of camellias one must first visualize how they grow in their native habitat. From the latitude of Tokio southward throughout Japan, on the southern tip of Korea, on the Liukiu Islands, and in the coast provinces of China south of Shanghai, the camellia is a common forest plant. Near the seacoast and in the rich, well-drained river valleys it becomes a tree thirty to forty feet high with a handsome straight trunk often a foot in diameter. On wooded hillsides, up to an altitude of 3,000 feet or more, we find it growing as an undershrub or small tree in rain forests consisting largely of broadleaved evergreens. The environmental conditions in these zones of distribution are essentially the same: a warm-temperate climate; heavy rainfall, and high humidity during the summer months; light rainfall, overcast skies and steady cool or cold weather in winter; and for soil an open, friable forest mold, slightly acid in reaction, which drains perfectly because of its natural slope.

Successful camellia culture is simply the duplication of this natural enviornment in our own gardens. We have the warm-temperate climate, and the light rainfall, overcast skies, and cool weather of the native winters. But our chief problem is to duplicate the heavy summer rains and high humidity of that habitat in our arid region, and to provide our plants with the filtered sunlight and the well-drained humus soil of the native forests.

That's all there is to it. But it's so plain that it won't make a good book, so short that it won't do for a speech, and so simple that no one will believe it.

CLAUDE CHIDAMIAN

IMPORTANT NOTICE

To accomodate our members and their guests and provide ample space for camellia displays, the meeting place of the Southern California Camellia Society has been changed.

McKINLEY JUNIOR HIGH SCHOOL

Del Mar and Oak Knoll Avenues, Pasadena (Two blocks west of Bullock's Pasadena. The entrance is the first one south of Del Mar, on the west side of Oak Knoll)

Meetings are on the second Thursday of each month, November - April inclusive. Flower display—7:30; Program—8:00 p.m.

COME AND BRING YOUR FRIENDS

AMONG THOSE PRESENT

A. G. PLAKIDAS is Plant Pathologist at the Louisiana Agricultural Experiment Station, Louisiana State University. Aside from his many articles in scientific journals, Dr. Plakidas is well known to many of our readers through his regular column, "Plant Pests and Diseases," in *Home Gardening* magazine. We are very pleased to present his splendid summary of the leaf scurf problem in this issue.

L. DOW PENDER, JR. is one of our out-of-state members in North Carolina. After being severely bitten by the camellia bug a few years ago, Mr. Pender decided to grow camellias in Raleigh, which is generally considered outside the Southern camellia belt. The results of his experiment make delightful reading.

A. E. MORRISON, besides being Agricultural Commissioner for Sacramento County, is also one of the Directors of the American Camellia Society. Mr. Morrison's article on the most subtly dangerous insect pest affecting camellias, *Brachyrhinus sulcatus*, is probably the finest discussion on the subject we have ever seen.

NEWS NOTES

The recent illness of Dr. David W. McLean will deprive us of his column "Test Garden Topics" for some time to come. We are happy to report, however, that he is well on the road to recovery.

Bakersfield's Camellia Society of Kern County has elected the following officers for 1948-49: President, Mr. Harold T. Williams; Vice-President, Mrs. W. J. Salisbury; Secretary-Treasurer, Mrs. Harold B. Brewer; Directors: Mrs. Fred Schweitzer, Mrs. Allison Eley, and Mrs. Roderick A. Ogden.

The San Diego Camellia Society Show will be held on February 19-20 at Balboa Park, with the theme "Jewels of the Garden." Exhibits will be open from 1:30 P.M. to 9:30 P.M. on the 19th; and 10:00 A.M. to 6:00 P.M. on the 20th.

Glendale will stage its annual camellia show when the Pacific Camellia Society takes over the Glendale Civic Auditorium, February 26-27. Exhibits will be open from 12 NOON to 10 P.M. on the 26th; and 10 A.M. to 9 P.M. on the 27th.

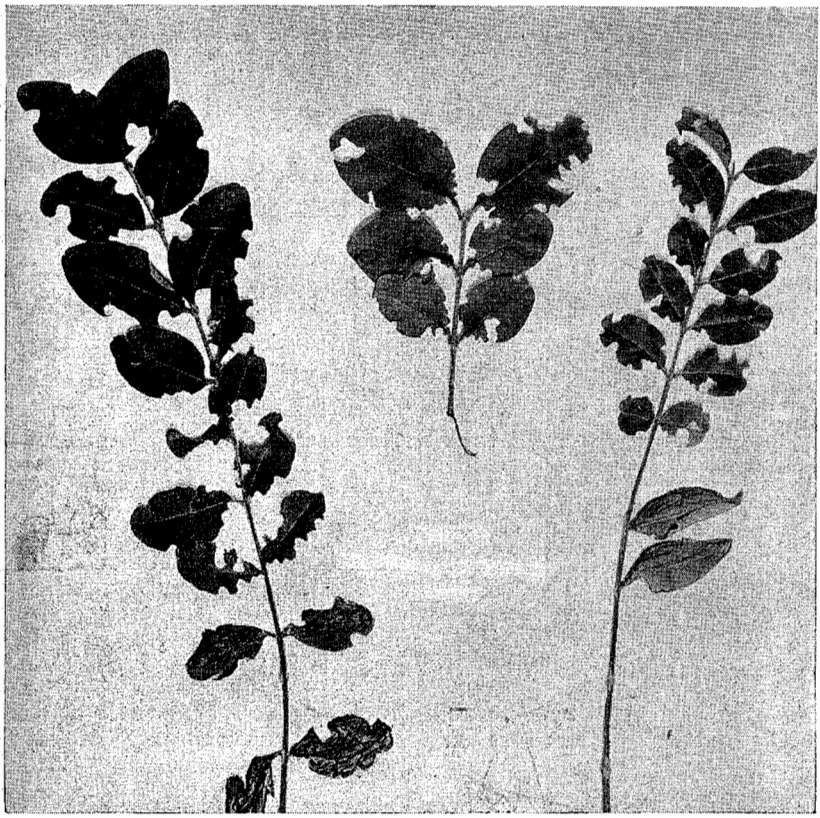
This will be a more elaborate affair than last year's show, with the floor space planned by a professional architect and the exhibitors competing for cups and medals. A Camellia Queen elected by the students of Glendale College will reign over the show, and a Hollywood star will be present to take part in the naming of a new camellia for her.

BLACK VINE WEEVIL . . .

(Continued from page 8)

LIFE HISTORY

The adult weevil is wingless and moves about only within a limited area, within walking distance. It prefers an environment which gives it protection, particularly a place where it can rest during the day. Loose soil, leaf mold etc., slightly damp but not wet is preferred. A close planting or crowding of host plants in containers tends to build up infestations. The eggs are dropped indiscriminately, usually from late June into September, depending upon geographical location. The eggs hatch in from 11 to 22 days and the larva or grub remains active for 72 to 113 days depending upon the season and location. The pupa stage takes from 15 to 22 days, usually in May and June.



Courtesy State Dept. Agri.

TYPICAL INJURY TO PRIVET LEAVES BY ADULT OF BRACHYRHINUS SPS.

The insect over-winters in a nearly full-grown larval, prepupal, or occasionally, adult stage. The adult may live for two seasons and lay from 600 to 1,500 eggs during its lifetime. Only one sex has been reported and reproduction is by parthenogenesis. One annual generation occurs, but there is usually an overlapping of adults. Feeding by adults is heaviest during late May, June, and July—although it continues during the active period of the beetle, into late September and October. Larvae appear in June and are to be found in the soil through the fall, winter, and spring.

CONTROLS

PLACEMENT OF PLANTS. The camellia does not appear to be one of the most preferred hosts of this insect but it is readily attacked when placed close to or under other host plants. The typical soil mixture used for camellias, high in humus, is attractive to the grubs. Remember the larvae start working as soon as they hatch from the eggs and if eggs are dropped on the ground by adult weevils feeding on preferred host plants near camellias, the camellias may receive full attention from the newly hatched grubs. Soil in containers where a camellia or other plant has been killed should not be reused without thorough sterilization. Dumping such dirt in a pile for reuse aids reinfestation, as the larvae remaining in the soil can exist on decayed leaves, plant material and manure, reach maturity and return in adult form to continue their round of destruction.

The girdling of camellias usually occurs where an inch or more of the trunk above the roots is covered with dirt. Girdling does not, as a rule, take place below where roots grow from the crown. Plants can therefore be accorded some protection by not allowing dirt to cover the crown above the roots. The use of excessive amounts of leaf mold, peat moss, etc. may build up sufficiently high around the trunk to provide ideal conditions for damage from the weevil larvae.

CHEMICAL CONTROL. The gardener must give as much, or more, attention to all the other host plants in the garden as he does to his camellias. Egg laying takes place mainly in June and July, and the application of sprays or placement of poison baits should be made before egg laying starts.

Control of the adult weevil, through spraying, has been obtained by dusting the foliage with a mixture of calcium arsenate and lime mixed in equal proportions; by spraying with 6 lbs. of Basic Arsenate of lead mixed in 100 gallons of water; or by the use of 2 to 4 lbs. of wettable DDT to 100 gallons of water. (*Caution*: The use of DDT, while satisfactory on most of the host plants, is not recommended for camellias.)

Objection is often expressed to the staining of foliage by the residue remaining after the use of the arsenical sprays. Poison baits can be used in place of sprays or as a supplement in areas of heavy infestations. The following formula has given good control. It is made up of:

Bran (Hard wheat, free of middlings)	5 pounds
Molasses	1 pint
Calcium Arsenate	4 ounces
Water	2 quarts

Mix the bran and calcium arsenate. Dilute the molasses with the water and add to the dry ingredients. Scatter the moist bait *on the ground* and under and around *all suspected plants in the area.* The weevil is attracted only to moist bait. Avoid watering the plants for at least twenty-four hours after application, as the percentage of kill is decreased where water is applied. By proper scattering of the bait on the ground, not in piles, there is little danger of its being picked up by animal pets or birds. Commercially prepared apple pulp baits have also been used to hold down infestations of Brachyrhinus weevils.

Treating the soil for control of the larvae presents many problems. Chemicals sufficiently strong to destroy insect life may also prove injurious to growing plants. Mixing 1 to 2 ounces of lead arsenate to a bushel (9 gallons) of soil used in repotting plants has been found to kill the larvae. This mixture may also be used to replace the upper two or three inches of soil in established pots, provided it is used prior to the hatching of the larvae, which are destroyed while attempting to enter the ground.

A number of new chemicals show promise in the control of both adult beetles and soil larvae. Among some that are worth experimenting with are:

Benzene Hexachloride (Trade names used: Gamtox, Isotox, Hexadow, Gammahex, Gammasix, Gammex, etc.)

HETP (Hexaethyl tetraphosphate)

Soil Fumigants:

D-D (Trade names: Shell D-D; Dow-Fume N.) May cause root injury to growing plants.

BHC (benzene hexachloride)

While these new materials have given good control on similar insects, they should not be generally used until sufficient time has elapsed to definitely prove their safety for use on camellias. In each case be careful to follow the manufacturer's directions given on the container label. Do not use toxic sprays on plants or fruit intended for human consumption.

The best program for protection of camellia plants is applying control measures to all other host plants in the garden, many of which are tolerant of sprays which might prove injurious to camellias.

CAMELLIA MISCELLANY . . .

(Continued from page 10)

With all the foregoing in mind it follows that, should we be able to secure varieties which would bloom before the hard frost line in mid-November, we can indisputably have excellent flowers. We must keep our eyes open for other varieties which are classed as late bloomers. Since our worst winter weather comes during January and February, we must hope for scattered bloom at best. Once in a while, the weather moderates to the extent that some flowers are seen. These warm spells incite growth of flowers which must inevitably be lost if they are caught by a hard freeze. That is one of our trials, though. If the naturally late blooming kinds can miss the onslaught of cold and withstand it, and the buds are not ruined, quite a few will open later and we have some midseason varieties blooming out of date. Then too, it is apparent that the singles, semi-doubles, and peony-flowered ones are

somewhat more resistant to cold than the formal double and imbricated forms. This is another generality, not a hard and fast rule, though it is seen that after much cold the formal flowers are affected with brown centers. Hence, it is wise in our section to limit the selection of varieties to those we know to be hardy and which normally dodge our worst cold.

Upon the above basis, it is apparent that we can grow camellias in Raleigh, and we do just that. We have camellias and lots of them. Till now, Nov. 15th, we have had no killing frosts, and plants which have been afforded the slightest protection have not had their open flowers ruined. In my yard, there have been excellent flowers of Daikagura, both the variegated and pink forms, Arajishi, Hibiscus, Mrs. William Thompson, and of course numerous Sasanquas.

In enlarging somewhat on the expression "protection," there is a question involved. What is protection? Not by any means a cloth over the plant, or necessarily any elaborate overhead means of preventing frost from settling. In my yard, the friendly pines seem to be about what we need. They branch up high, prevent white frosts from settling, and keep off early winter morning sunlight which can be disastrous after a night of freezing weather. The fallacy of north-side-of-the-house planting has been preached so long around here that most folks think I'm a heretic when I say "Plant 'em anywhere they are most effective—if only they get some slight shade, particularly in winter." I have noticed that camellias planted in too much shade become terribly infested with scale and bloom sparsely.

In summing up this little article, it is obvious that we can grow camellias in this borderline area if we take care to observe some not too limiting rules. And once *properly* planted, camellias are definitely not exacting—thus enhancing their desirability. The seasons when we are the losers, during particularly bad winters, we shouldn't become discouraged. Rather it should encourage us to be more careful in our selection of varieties, paying special attention to those requirements which must be met in order for us to succeed. The standard methods of preparing soil, planting, etc., probably apply to camellias the world over so I shall not dwell on them. They are too well known. What we are on the lookout for are more early and late blooming varieties.

RESEARCH . . .

(Continued from page 12)

the method used is that most commonly employed in making grafts, and is perhaps less certain of accomplishment.

III. *Sixty cleft grafts of C. M. Hovey divided into ten units of six each, on the same virus infected suspects referred to in Experiment I.* The purpose of this experiment is to ascertain to what extent, if any, virus infected understocks influence resultant grafts.

IV. *Twelve cleft grafts.* Six grafts each on C. M. Hovey understocks of scions removed from plants which have displayed almost unmistakable evidences of being virus infected. After the grafts have "taken" the understocks will be permitted to "sucker," following which the grafts will be destroyed. If virus is present it should manifest itself in the suckers rising from the understocks.

V. *Ten cleft grafts: C. M. Hovey on C. M. Hovey understocks.* The instruments used in making this group of grafts will during the process be used

in cutting some virus suspect such as Rosita. The purpose of this experiment is, of course, to determine to what extent, if any, virus is transmitted to otherwise virus free grafts through the use of unsterilized instruments.

C. M. Hovey has been selected for the reason that there is a popular assumption that a strain of this variety (Scarlett O'Hara) is virus infected, and it is the wish of the Committee to experiment on the true strain which has shown no evidence of virus infection. Otherwise it would be possible to select Covina or some other solid red camellia, which would readily disclose variegation if variegation is induced by grafting. The possible penalty for chosing Covina might well be that all Covinas are virus infected, but the infection so masked or concealed that it has never visibly manifested itself.

With the exception of Experiment V, all grafting will be done with sterilized instruments, which is referred to for the purpose of demonstrating the care which will be taken to guard against accidental infection.

Heretofore plant materials used for experimentation have generously been supplied to the Committee by commercial growers, but in this instance the several years involved in completing these experiments and the fact that there will be little salvage of value at their completion has led the Committee to conclude that all plants included in the experiments should be purchased. It is believed that the importance of the experiment to the industry will enable this to be done at very reasonable prices. The number of plants involved runs to two hundred sixty-two (262). Most of these will have to be chosen with extreme care and the materials assembled from various points.

Grafting with sterilized instruments will be a slow process. Housing and caring for these grafts in the glass house at Cal-Tech until they have "taken" and the work done on them preliminary to the test outlined above will be no small task. Then there is the long wait extending over a period of years, with the interim housing and care for the plants and the interminable records to be kept! Can too much be said in commendation of the Committee for the program, and the generous spirit of cooperation of the California Institute of Technology in making this work possible? *You* be the judge.

CAMELLIA ODDITIES[1]

Mr. William Hertrich, Currator Emeritus of the Huntington Botanic Gardens, told me a story a short time ago which is certainly worth retelling here.

While visiting the nurseries of Duncan & Davies, Ltd., in New Plymouth, New Zealand, in 1938, Mr. Hertrich was interested to see that they had many large specimen camellias growing on their grounds. Since the day was very damp and cold, the manager of the nursery suggested to Hertrich that they have tea together in his home.

Seated before the fireplace, Mr. Hertrich suddenly noticed that the logs in teh wood basket seemed to b camllia wood, yet he hesitated to say anything about it because he could hardly believe his eyes. Finally the manager, noticing Mr. Hertrich's predicament, laughingly admitted that it really was camellia wood. A short time before, he explained, while making new roads through the nursery grounds, they had to cut down several large camellia trees, and now the logs were being used for firewood.

While almost everyone knows that camellias are to be found in Australia, few people realize that they are grown in South America. Mulford and Racine Foster in their book on bromeliad hunting, *Brazil: Orchid of the Tropics,* describe oone fine camellia plant which they found at the monastery at Caraca. The monastery, founded in 1775, is located slightly above the tropics as far as temperature is concerned, so both sub-tropical and cool-temperate plants can be grown there. Wherever similar conditions exist in South America, camellias are likely to be found.

The Fosters picture the camellia at Caraca beautifully.

"In the garden a lovely camellia has been growing some 80 or a 100 years. The pure white blossoms of the *alba plena* find a noble setting in the formal garden of this old monastery. It is no longer a shrub, it is a tree with thick trunk standing twenty feet high. Our minds quite naturally thought of what a price it would bring, but our hearts knew that its price was not in coinage, but in the tender care and love three or four generations of monastic gardeners had given it. It had thrilled and spoken many a benediction of purest religion to countless worshiping eyes."

In the light of such reports, it has been suggested recently that many of the first camellias brought to California and the Pacific Coast may have come not from the South or East, but from the old plantings of South America.

Although we have seen how the Japanese in early times showed very little interest in developing new varieties of *Ce. japonica* (*Bulletin,* September 1948, p. 11), American growers seem to have no such superstition. They not only don't mind increasing the varieties of *C. japonica,* but some of them are even trying to get them all on one plant. P. L. Van Der Bom of the Portland Camellia Nursery thinks he holds the world's record for this last feat. He proudly boasts in his 1948-49 catalog:

"ONE SIX-FOOT CAMELLI GRAFTED WITH OVER 100 VARIETIES ON ONE PLANT which blooms three seasons of the year, fall, winter and spring, all grafted on the same plant, which is the world'h record . . . $1,000.00."

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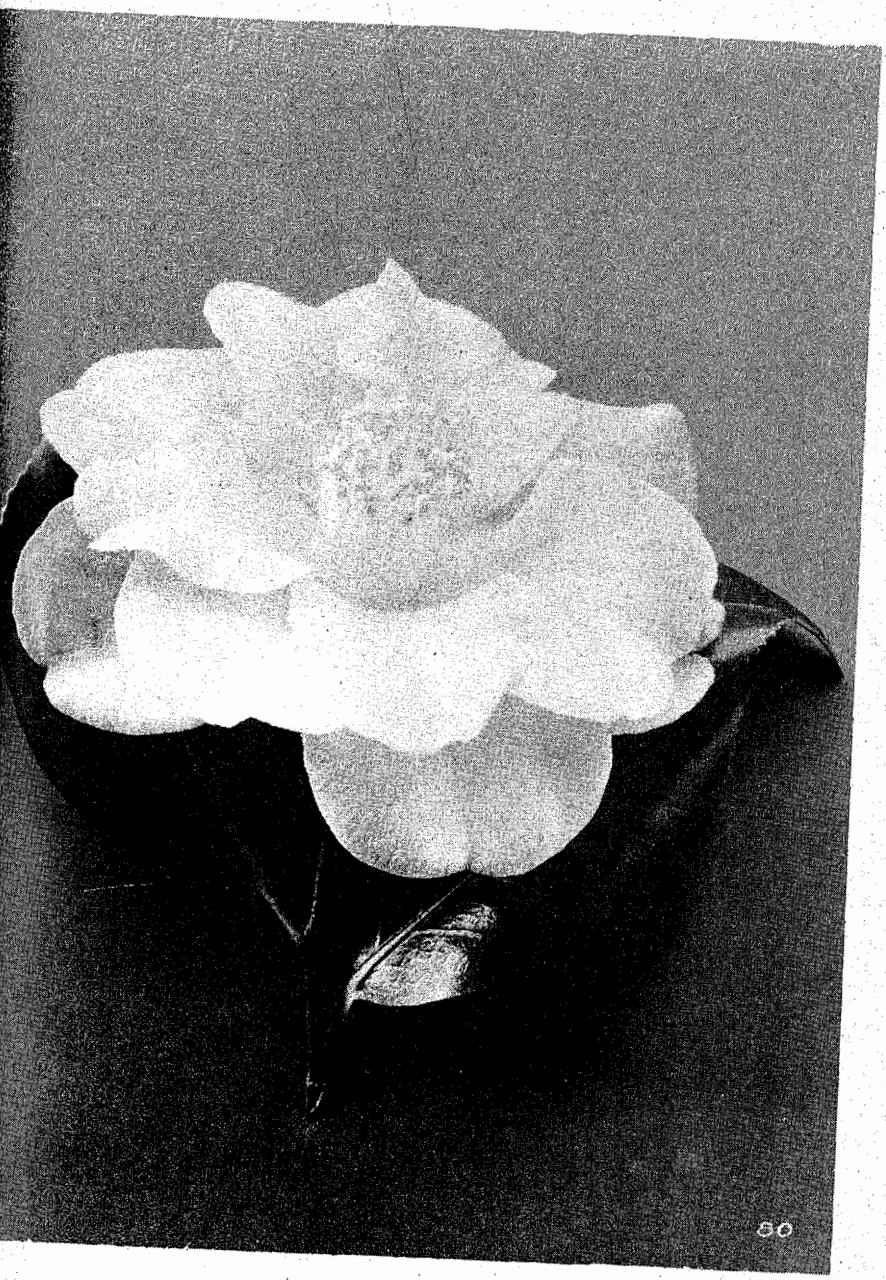
[1] Reprinted in part from *Home Gardening,* VIII (April 1948) 108.



Paul J. Howard's photo.

CAMELLIA JAPONICA • LADY CLARE


LOS ANGELES
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