

The Camellia Bulletin

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Hybrid Camellia CARL TOURJE

(See Page 14)

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The Camellia Bulletin, in keeping with the fundamental concept of the amateur organizations it serves, is a non-profit enterprise published quarterly (Nov., Feb., May and Aug.) by the Northern California Camellia Society, Inc. Its principal objects and purposes are furtherance of the enjoyment and benefits derived from the culture of camellias and the dissemination of knowledge related thereto. By special arrangement with, and through the co-operation of, the Pacific Camellia Society, The Camellia Society of Sacramento and the Los Angeles Camellia Society, this Bulletin is also available in conjunction with membership, which is open to the general public upon application to the Secretary of any of the societies mentioned, at the respective addresses shown above. For full membership in the Northern California Camellia Society, Inc., and with respect to all persons resident in the counties of Alameda, Contra Costa, Marin, San Francisco and San Mateo, the annual dues are \$5.00—outside that area, limited membership privileges, including the right to all Society publications, are \$3.00 per year. **MEETINGS** are held on the first Monday of each month November through May, at 8 p.m. in the Claremont Junior High School Auditorium, Oakland, and include an informal flower display and refreshments. All matter regarding the content of the Bulletin should be addressed to the Editor. **CHANGE OF ADDRESS** should be reported promptly to **your Secretary**, as the Post Office will not forward periodicals. Remit dues to Treasurer.

THE SHOWS—THE SEASON

This has certainly been a year to be remembered. The most notable event in this regard was the cancellation of the Annual Meeting of the American Camellia Society and accompanying show at Shreveport, Louisiana, scheduled for early March, due to a record freeze about which you will find considerable first-hand comment in the pages following. However, the impact of the weather was by no means limited to the Gulf Coast. While no major shows were cancelled or postponed in California, nevertheless cold weather did take its toll in the way of a material reduction in the quantity of blooms available at all except the shows held after about the middle of March. The February shows in the Los Angeles area and the late February and early March shows in Northern California showed the effects of the freakish weather—not necessarily because of cold damage but due more to the retarding of bloom. The quality of the flowers was, however, superb. Not only that, but because of the exceptional substance and the almost total lack of petal blight evidence, no doubt due to the absence of warm weather at show time, the flowers held up exceptionally well so that the exhibits were equally beautiful on the second day.

The later shows were thus the major beneficiaries of the vagaries of the weather. The frustrated exhibitor, who would normally be content to enter in only his own and nearby shows, found that his best flowers came too late for these events, consequently put out the extra effort required to exhibit at shows considerably distant, as witness the fact that the Walnut Creek show this year lists among the ten who received the greatest number of blue ribbons, three who came from at least 200 miles distant. In fact, because the applications for entry cards made it obvious that the Walnut Creek show was about to be swamped with blooms, it became necessary at the last minute to place a limitation upon the number of flowers (100) or entries (60) one exhibitor might display, thereby assuring space for the smaller exhibitors and, to assure that the out-of-towners would not be found making the trip in vain, in a fine display of good sportsmanship our largest and most successful local exhibitor withdrew entirely when it became apparent that the size of the exhibit hall would be inadequate to accommodate all of the entries. The following week-end, blooms were even more abundant with the result that the maiden show held at Modesto, California, the week-end of March 17-18, was an outstanding success, with major exhibitors from both the northern and southern parts of the state participating.

As to blooms in the garden, we have never seen anything like it in twenty-plus years of camellia experience. To begin with, blooming season lines were almost completely broken—early ones came mid-season and late—and a great many varieties put on two absolutely different blooming cycles. (We shall have creditable flowers of a number of varieties for a talk on May 18th.) The mass blooming effect in the garden was quite surprising, with KUMASAKA, DAVIS' ROSE DAWN, JARVIS RED, BARONNE DE BLEICHROEDER, CANDIDISSIMA, PINK BALL, VEDRINE, REGINA DEI GIGANTI, GREAT EASTERN, GALILEE, MATHOTIANA and a few others putting on a show of color that would have done credit to the English countryside. Many of the hybrids were quite outstanding, both in size of flower and the quantity of bloom. PHYL DOAK, CITATION, ROBBIE, DONATION and MONTICELLO were among the best. All in all, it has been a unique season.

JUDGE ARTHUR W. SOLOMON—1873-1962

One of the real stalwarts of the camellia world, Judge Arthur W. Solomon of Savannah, Georgia, a founder, past president (1949-1951 incl.) and long-time director of the American Camellia Society, passed away on April 22nd after a prolonged period of incapacitation. No more enthusiastic and indefatigable camellia hobbyist ever lived—here was a man who, almost until his dying day, notwithstanding the infirmities and ailments common to a person in his late 80's, nevertheless retained an active interest and, with an optimism that must stand as an object lesson in psychology, even continued to plant camellia seed which he could not possibly see bloom unless he lived to be

over 90. His mind was alert and keen until the end—this writer carried on a regular correspondence with the Judge for many years and we had exchanged letters just a few days before he died. The Judge's garden reflected the soul of the man, as is so often the case. "Wellesley Manor" was a retreat—peaceful, restful and a thing of surpassing beauty, with that mellow atmosphere that only years can bestow.

Possessed of a quick wit and an engaging sense of humor, Judge Solomon was always an interesting person and good company. A perfect host, it was a rare privilege to visit his home and garden and partake of his specialty, the outdoor oyster roast. He had been long active in civic affairs and was a credit to his community, giving of himself in this field as unstintingly as he did of his garden to his friends, who were legion. A long-time grower of camellia seedlings, Judge Solomon produced several outstanding ones, among which FRANCES SOLOMON and MISS FRANKIE (named for his late wife) were notable. The "little colonel" is gone and the camellia world has suffered a great loss—there will never be another like him.

BOOK REVIEW

"Camellias"—by E. B. Anderson, Blandford Press, Ltd.,—1961—115 pages—5¾" by 8¼" hard cover.

This new book on camellias is written not by a camellia specialist but by one who is nevertheless quite familiar with his subject and who has drawn heavily upon others and other writings, with the result that a remarkable amount of historical, cultural and descriptive material has been condensed into an excellent, orderly arranged book which, while designed primarily for the amateur, nevertheless is one of interest to the specialist. The book contains thirteen color plates of exceptionally good quality and 19 black and white illustrations of flowers, plants and arrangements and is first-class throughout. It is essentially a practical work and deals extensively with the culture of camellias under cold weather conditions, such as prevalent in England. Obtainable from the publishers at 16 West Central St., London, WC 1, price 14 shillings prepaid (\$2 U. S.).

LUCY HESTER CAMELLIA GARDEN

Dedication of this beautifully situated and landscaped section, a unit of the famous Descanso Gardens at La Canada, California, was held on February 20th, 1962. This garden is a memorial by Mr. K. O. Hester of Stockton to his late wife and reflects great credit upon both the donor and the Descanso project as a whole, containing not only numerous beautiful specimen blooming plants but many of the newer and rarer varieties, about 300 in all, among which are fine plants of the seedling camellia LUCY HESTER. All concerned are deserving of the heartiest congratulations for conceiving and bringing into being this beautiful memorial garden for the enjoyment of the general public.

AMERICAN CAMELLIA SOCIETY ANNUAL MEETING

At the 17th annual meeting, transferred to Charleston, S. C. from Shreveport on very short notice due to extreme weather conditions, all officers were re-elected including S. H. Hackney of Charlotte, N. C. as Vice-President Atlantic Coast, (successor of Dr. W. T. Rainey—deceased). Alton W. Parker, of Temple City, California, was elected Vice President Pacific Coast following the announced retirement of R. W. Ragland.

Over strong opposition from the West Coast, it was voted to combine the states of Oregon and Washington as a district, so that there will be but one director elected from these states collectively in the future. The offer of John N. Sewell of Jacksonville, Fla. to donate a silver cup annually for the best new mutants or sports was accepted. The charge of \$2 for the registration of new seedlings was eliminated. Caryll W. Pitkin of San Marino, Calif. was elected to serve the unexpired portion of the term of Milo E. Rowell, resigned State Director for California. The 1962 annual meeting will be held in Shreveport, La. February 28-March 2.

There have since been other changes in the directorship of the A.C.S. affecting California. William E. Woodroof and Mrs. Vern O. McCaskill resigned as Directors-at-Large and Woodford F. Harrison of Berkeley and Maynard Munger of Fresno have been nominated to succeed them.

CAMELLIA FERTILIZING EXPERIMENTS

Woodford F. Harrison, Berkeley, California

Among the projects undertaken by the Northern California Camellia Society's Plant Experimentation Committee, chaired by Harold L. Paige, was an experiment on fertilizing, consisting of a comparison between the results obtained by frequent applications of liquid fertilizer and somewhat less frequent feedings of dry fertilizer. Carrying out these experiments was assigned to me for the reason that my camellia growing area is equipped to feed liquid fertilizer through the irrigation system.

Since 1956 I have fertilized through the irrigation system by use of a small venturi ahead of the hose valve. The venturi draws stock fertilizer solution (see formula given below) into the water in the ratio of one part of fertilizer solution to 30 parts of water. This method of fertilizing is not new. It is practiced by some commercial growers. I have found it to be an easy way to apply very light amounts of fertilizer at frequent and regular intervals. In this case the plants are fertilized once a week immediately following an application of clear water. They are irrigated twice more during the week without fertilizer. This procedure provides relatively low cost fertilizing, in spite of the fact that heavy irrigation probably washes out most of it. The washing-out process is important, however, because it prevents build-up of salt concentrations. For me this system of fertilizing has been effective and economical of labor.

I have also practiced fertilizing with a dry mix chemical and cottonseed meal fertilizer for camellias planted in the open ground in other parts of the garden. It is a rather time-consuming operation to remove the mulch around the plants, put on the dry fertilizer and replace the mulch. The dry mix fertilizer that I use has a cottonseed meal base intended not only to supply a quick spurt of nitrogen from the chemicals but also slow feeding of nitrogen from decomposition of the cottonseed meal. My practice with dry feeding of plants in the open ground has been on the basis of three times a year, on approximately February 1, May 1, and August 1. For those plants that are small and for which heavy wood growth is desired the dry fertilizer has been applied once every six weeks.

There has always been a question in my mind about the merits of these three methods of fertilizer application. The experiments described here have been designed to determine which, if any, of these procedures has outstanding merit, or whether they are perhaps approximately equal for the purpose of good plant growth and quality of blooms.

It was decided to utilize for the experiment twelve *Kumasaka* plants that had previously been used by the Experimentation Committee for work with colchicine. These plants were in gallon cans, and although of the same age, varied in size from twelve to twenty inches in height. Eighteen *Elegans* plants were also purchased, from John E. Edwards. These plants were in gallon cans and consisted principally of a single stalk twelve to fourteen inches in height, all of the same age, and selected for uniformity in size. The plants were divided into five groups as follows:

Group 1. Six *Kumasaka* plants scheduled to receive the standard dry mix fertilizer, 1 level tablespoonful every six weeks starting February 1, 1960.

Group 2. Six *Kumasaka* plants scheduled for regular weekly feeding with a standard liquid fertilizer through the irrigation system. Concentration of fertilizer in February through July was double that used for the balance of the year.

Group 3. Six *Elegans* plants to receive the same treatment as Group 1 of the *Kumasakas*.

Group 4. Six *Elegans* to receive the same treatment as Group 2 of the *Kumasakas*.

Group 5. Six *Elegans* scheduled to receive dry feed—1½ level tablespoonsful per feeding per plant—on February 1, May 1 and August 1.

Immediately following the blooming season in 1959 the *Elegans* plants were purchased, and all the *Elegans* and *Kumasakas* were removed from the gallon cans and planted in 1½ gallon cans in a uniform camellia planting soil mix. The planting soil is one that I regularly use and is fairly strong in nutrients to begin with. For this reason

the fertilizing routine was not started until February 1, 1960. On that date the height and the caliper of the base of each plant were recorded. They were placed fairly close together in an area protected from early morning and later afternoon sun, but did receive direct sun rays during midday. At this starting date on February 1, 1960, it was noted that all plants had shown good growth during the season just past.

A year later, on February 1, 1961, all plants were again measured for caliper and height. At that time it was thought that a fairly accurate measure of the plant growth could be obtained for each group of plants by multiplying the sum of the areas of the cross section of the bases by the sum of the heights. Unfortunately the plants did not branch uniformly and these results proved to be too erratic. It may very well be that the potting soil still retained enough of its original nutriment to make comparison between the three methods inconclusive. This led to the decision to weigh all plants. The weighing was done February 1, 1961, immediately following irrigation. The containers were filled to overflowing with water and allowed to drain for about three hours. The feeding experiments were then carried on in the same manner for a second year.

On February 1, 1962, caliper and height were again recorded, and the plants weighed. After the plants had come into full bloom, and on two occasions two weeks apart, all full-blown flowers were measured for diameter, the diameters averaged for each group and recorded. The table below gives these results.

	*Percent Increase in Cross-Sectional Area of Base × Percent Increase in Height 2nd Year	Increase in Weight (Lbs.) 2nd Year	Average of Flower Diameters (Inches) Feb. 2, '62
Group 1	990	3.49	3.64
Group 2	2150	3.61	3.66
Group 3	7600	6.23	3.90
Group 4	7020	8.04	4.13
Group 5	826	5.35	3.84

Examination of the tabulations and computations for *Kumasakas* in Group 1 and Group 2 shows that by the criterion of weight increase the two methods of fertilizing gave close to the same results. There was a total increase of 3.49 pounds for Group 1, having dry feed at six-week intervals, and of 3.61 pounds for Group 2 with the liquid feed. I have more confidence in this change in weight as a means of measuring plant growth than in the figure obtained by multiplying the cross-sectional areas of the base by the heights. Group 1 shows this latter figure to be 990, and Group 2, 2150.

The increase in the weights of the plants and in the flower diameters leads to one conclusion: the dry feeding on a six-weeks basis and the light liquid feeding on a weekly basis are close to equivalent. Careful inspection of the condition of the plants did not reveal any difference. Size and color of the foliage and density of the growth were very similar for these two groups—1 and 2.

Reference to the table for Groups 3, 4 and 5 shows a different result. Again we have most confidence in the increase in weight. Group 3 showed a total increase of 6.23 pounds. Group 4, 8.04 pounds, and Group 5, 5.35 pounds. These groups represent respectively: dry feed on a six weeks basis, liquid feed on a weekly basis, and dry feed on a three times a year basis. The liquid feeding shows a considerably larger plant growth than the dry feed on a six week basis, and an even greater difference over the dry feed three times a year. By the method of multiplying the cross-sectional area of the base by the height, the dry feed on a six weeks basis looks close to the same as, or a trifle better than the liquid feed, and both of these considerably better than the dry feed three times

*In the case of the *Kumasaka* plants it has been pointed out that there was considerable difference in size at the start of the experiment. To eliminate at least partially the influence of size on growth rate, the percentage change of cross-sectional area of the base, and percentage change of height were used rather than the actual change.

CAMELLIA SOIL ANALYSIS

J. Carroll Reiners, Sacramento, California

This is a report on the soil analyses made by Dr. Andrew Wanie, Director of an Agricultural Research Laboratory in Sacramento, on several camellia soils for members of the Sacramento Camellia Forum, a discussion group dedicated to Camellia study and minor Camellia Research.

For several years the Forum had discussed the questions and content of soils, mixes, micro-elements and fertilizers. It seemed that each member had his own special "Blue Ribbon Mixture." We came to realize the complexities of the problems confronting a camellia hobbyist in trying to understand the management of soil, its living organisms, and its chemistry as related to plant nutrition. The analysis of these element relationships, we learned, was the work of those trained in this specialized field. Nine soil samples were submitted to the research laboratory named above.

The soil samples chosen for analysis, and listed in the following chart, need a brief explanation.

No. 1—A backyard top soil of fine sandy river silt with no additives, which was used as a check for comparison with the other samples.

No. 2—A new potting mix fortified with additives.

No. 3—From a camellia container in which the plant was of average vigor.

No. 4—From a potted camellia of average vigor.

No. 5—From a container-grown camellia which was not growing well.

No. 6—From the root area of a ground-grown *C. reticulata* of low vigor.

No. 7—From the root area of a ground-grown camellia of low vigor.

No. 8—From container-grown camellia of average vigor.

No. 9—From a potting mixture, over-fortified with additives, some plants showing minor injury.

Laboratory comment on the soil samples follows:

RESULTS OF SOIL ANALYSIS

Note: the figures in colums C to J express pounds per acre.

Column	A	B	C	D	E	F	G	H	I	J
Soil Sample	pH	Electrical Conductivity	Nitrate Nitrogen	Ammonia Nitrogen	Phosphorus	Potassium	Calcium	Magnesium	Sulphate	Chloride
No. 1	5.0	56	14	24	205	175	3800	850	46	270
No. 2	5.4	560	110	28	170	480	7600	1100	210	1600
No. 3	6.3	110	48	25	95	320	5100	1700	154	710
No. 4	6.1	210	56	48	190	410	6050	2400	180	860
No. 5	5.2	545	78	42	210	670	9100	950	290	1250
No. 6	6.7	68	17	41	195	166	6300	1300	58	155
No. 7	5.0	36	15	54	176	188	3900	640	50	140
No. 8	5.8	345	104	46	280	305	6100	1700	225	910
No. 9	5.1	220	86	56	370	410	4900	1450	210	890
*	5.5									less
	5.8	100	25	25	100	200	4500	1000	200	than
										500

Sample No. 1. The pH is a little low. The nitrates and calcium are a little low. The phosphorous a little high and magnesium and sulphate are low. Corrections: add dolomite lime to raise the calcium, magnesium and pH; next use ammonium sulphate to raise the nitrogen sulfates and lower the pH to keep balance between the effect of dolo-

*Note: The writer has interjected this as a medium (satisfactory) range and it is so expressed as an approximation for comparison purposes with the tests. Each of the nine soil samples would probably have a different capacity to carry more or less salts which would not be toxic to the plants growing in the soil mix, depending on the degree of soil texture, moisture and organic materials in it.

mite lime and the ammonium sulphate. In other words: raise the pH with lime and lower it slightly with ammonium sulphate.

Sample No. 2. This soil is a medium acid soil, very high in nitrate, medium in ammonia nitrogen, high in phosphorus, very high in calcium, very high in potassium, medium in magnesium, medium in sulphate, and high in chloride. Electrical conductivity is high.

Sample No. 3. A slightly acid soil, high in nitrate, medium in ammonia nitrogen and phosphorus, high in calcium, medium in magnesium, low in sulphate and medium to high in chloride. The electrical conductivity is a little high.

Sample No. 4. Too high in potassium, chloride and electrical conductivity. Everything else is O.K.

Sample No. 5. The pH is a little low. The nitrates, potassium, and electrical conductivity are too high. The phosphorus is a little high and the magnesium is a little low.

Sample No. 6. The pH is a little high, while the nitrates are a little low and the sulphates low. Use ammonium sulphate to lower the pH and raise the nitrogen and the sulphates.

Sample No. 7. The pH and the nitrates are a little low. The calcium is a little bit low, the magnesium very low, and the sulphates are low. Use dolomite lime to raise the pH, calcium and magnesium level. Use ammonium sulphate to raise the sulfate level.

Sample No. 8. The pH is ideal. The nitrates, phosphorus, chlorides and electrical conductivity are too high. The potassium is a little high.

Sample No. 9. This is a strongly acid soil, high to very high in nitrate, high in ammonia nitrogen, very high in phosphorus, very high in potassium, high in calcium, medium in magnesium, medium in sulphate and high in chloride. The electrical conductivity is high.

GENERAL LABORATORY COMMENTS: Soil pH of 5 to 7 is recognized as best for Camellias. However, a soil acidity range of 5.5 to 5.8 pH is recommended because the average faucet water has a 7.5 pH. Soil maintained sufficiently low in pH will counteract the alkalinity of the irrigation water.

High electrical conductivity indicates high amounts of soluble salts. Faucet water is usually high in chlorides; consequently, the soil must contain sufficient well-decomposed organic matter to buffer the harmful effects of the chlorides. Black peat soil is best for this purpose. It has a high moisture holding capacity; the salts in diluted form won't hurt the plants.

Leaching is recommended for soils high in salts analysis. After leaching (and the soil has thoroughly drained), corrective measures may be in order, to restore a desired pH and a balance of elemental factors. It was noted that plants grown in a soil of high organic content, with a high soil moisture and cool location, can tolerate much higher nutrient and chloride concentrations than plants in a sandy type soil free from organic matter and with low moisture content. The ideal moisture content of the soil is perhaps the most important part of nutrient intake.

Overly high soil levels of phosphorus can cause micro-nutrient deficiency in the plants. This oversupply of phosphate can promote the same symptoms on the leaves as would result from too much salt in the soil: so discrimination must be observed here.

The Laboratory stated that the analyses indicated a good deal of overfertilization, up to using three times as much as was needed. The reports pointed to the tendency of the growers to over-complicate the fertilizer program with a use of "extraordinary and rare fertilizers." Laboratory experiences show that "90% of garden or container grown plants have been overfertilized."

AUTHOR'S SUMMARY: While this report was specific only for the soils chosen, it does show a possible pattern in plant fertilizing. Sample No. 1 shows a close conformity to what might be termed a medium analysis. The pH indicates that the camellia hobbyist is quite conscious about and consistent in his care of soil acidity. There is definite evidence that plants in containers are subjected to medium to high concentra-

(Continued on Page 12)

GRAFTING TECHNIQUES

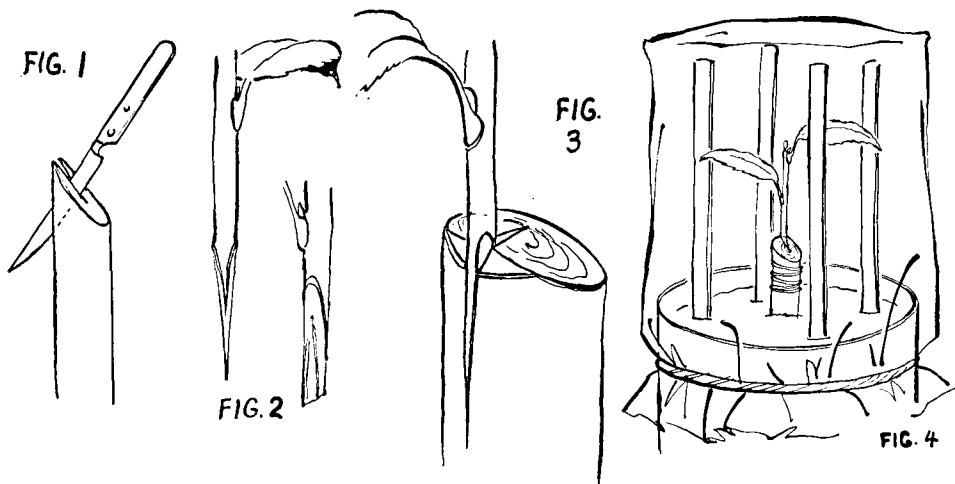
Jack Osegueda, Oakland, California

One of the biggest thrills to Camellia fanciers is to see their new prize graft take off! Starting from a tiny bud growth is fast, almost as you watch, for within a week or two a graft will grow from 10 inches to many feet, according to the size of the understock forcing it! Many grafts, depending on amount of light, variety and your luck, will set flower buds the first year with robust blooms resulting from the great energy the root system is pushing to its top.

Reason for Grafting: This method of propagation is used to produce plants which attain an earlier maturity of bloom, with more vigorous growth than would be possible in plants on their own roots. In three to five years the top growth catches up with the root system and the grafted plant attains the size of the original plant. Inferior older varieties need not be discarded, just cut them off and graft one of the new, better camellias!

Time to Graft: Is when you are fortunate enough to get scions! The writer has had good success every month except April, May and June, the time of new growth. There is no size limit on plants to be grafted, from matchstick up to many inches in diameter. Experienced grafters and commercial growers prefer pencil size to $\frac{3}{4}$ inch, using the easy cleft graft, from December through February. Scions may be kept several weeks until used, simply moisten slightly, put in a plastic bag and keep in the refrigerator.

Cleft Grafting: After many years of experimenting and from surveys made throughout the country, I have come to the conclusion that the best result is had when only one side of a $\frac{5}{8}$ to 1 inch understock is used. Cut off understock with a small saw 4 to 5 inches above the soil, making a long sloping cut which is trimmed smooth with a knife. A sharp vertical knife cut is then made about $\frac{2}{3}$ across top extending 2 inches down side, being careful not to split cambium layer and bark on opposite side of trunk (this is possible with a sloping cut) (see Fig. 1). Notch out on each side of cut about width of scion, then with a small screwdriver which has been filed to a point on one side (or any metal blade about $\frac{1}{4}$ inch wide) the cut is forced open and a 3-inch scion with two or three leaves is carefully inserted, exactly matching the cambium layer (a thin green section inside the bark) or crossing it by having bottom of scion slightly inside of understock and the top part outside. The scion should be carefully trimmed (writer prefers single-edge razor blade) so as to be thinner on inside edge thus to allow outside edge to fit close. (Fig. 2) Experience will teach you to make the proper taper about $1\frac{1}{2}$ inches long with even cut on both sides. Scions not round in shape should be trimmed on the flat sides or cambium layers will not match sides of understock on insertion. Reticulata



scions usually are not round, this accounts for poor results many get if scion cuts are uneven. A little study will indicate the proper cutting and remember that $\frac{1}{8}$ inch of the cut portion of the scion must extend above the understock so that the callus will knit over. (Fig 3) If the understock is not split down both sides, scion will be secure enough without tying, but to be sure, use rubber band (heat treated grafting type) or waterproof string to keep scion in place during healing*

After-Care: Add $\frac{1}{2}$ inch of sand or peat after cleaning off old soil at base of stock, then dust a fungicide (writer prefers Captan) over leaves, the cut and soil. Place a gallon jar over the graft, if in the ground, seal with soil around outside to keep airtight. In a glasshouse, callusing should start in a few weeks and in about two months the scion will have knit firmly to understock. In the colder outdoors it will take longer but is usually safer. I have seen commercial growers lose hundreds of grafts that dehydrated from sudden hot weather. When callused, jars can be tilted slightly allowing air to enter, raised higher a few days later, then taken off completely if leaves appear fresh and new growth eye looks firm. If dry and wilted when first aired, replace jar air-tight for few weeks more. A good many grafts are lost by taking the jar off too early or too suddenly. For gallon can and pot grown plants, plastic bags instead of jars are excellent. Place short sticks or wire as framework to hold bags several inches above scion, rubber band or string will hold bag snug around container. (Fig. 4) When callused, small hole can be torn in bag, enlarged later, then bag taken off completely. At this time, rubber or string on understock can be taken off, the top sealed with grafting wax or tree seal. Greater callusing results when only one side of understock is split, the ring of live callus circles the understock leaving no dead wood on the stub. This is particularly good technique in the case of cleft grafts in summer when the bark is loose. The cut on one side, only, will not require hard tying to close the split, which otherwise loosens bark and results in graft failure.

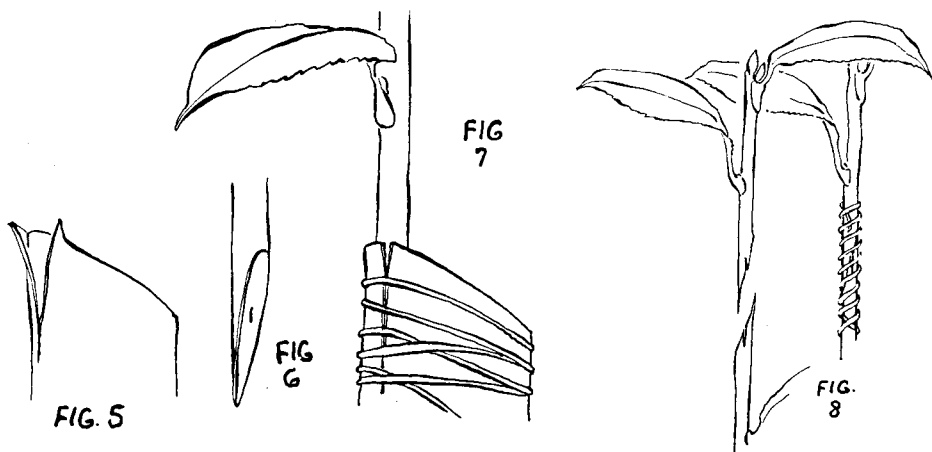
Successful grafts result from good healthy understock, not sick plants. In containers they should be on the dry side. Sick, soggy plants will usually die at the roots, the graft will knit, grow, dry up and you will find the cambium layer and bark brown, yet the moisture allowed the scion to grow. Dieback and fungus can attack, often from too much moisture and when bleeding is excessive. If mold forms on fresh cut, wipe clean, air for several hours, dust with fungicide again and return jar or plastic bag, repeating if necessary.

Late grafting sometimes finds the scion sprouting before healing is complete. Growth will die if the jar is removed, therefore just let it grow and if necessary use taller plastic bag or raise jar by using metal collar (coffee can or gallon can with ends cut out). It will be necessary to let this new growth harden off before the cover can be removed. To avoid growth before healing, graft no later than early March.

Experiments: It is recommended that you use only one scion on each stock when cleft grafting (a scion with 3 leaves is preferred) as a large understock usually develops 2 or 3 branches from a single scion. Scions with but one leaf and eye taken lower on the branch (not the tip) give excellent results but produce only one stalk. Multiple grafts (of different varieties) usually do not grow evenly or bloom at the same time and the end result finds you cutting off all but one variety. Multiple grafts of one family (such as *Elegans*, *C.M. Wilson*, *Shiro Chan*) grow evenly, but nothing is gained except the novelty of different color blooms on the plant, unless space does not permit having separate plants.

Bark Graft in Summer: Due to the fact that the bark is loose during the summer growing period, making a cleft graft impractical, a bark graft is used as it permits full and complete contact with a solid cambium layer on the understock. The understock is cut off from 4 to 5 inches above ground, a vertical cut about $1\frac{1}{2}$ inches long is made down the side through the bark. (Fig 5) The bark is loosened on each side of the cut from top down. (Fig. 5) Then the scion is beveled on one side to result in a smooth

*Plastic electrician's tape, $\frac{1}{2}$ " diameter, is also excellent, flexible and easy to apply—ED.



slanting cut about 1 inch long. (Fig. 6) The scion is then slid bevel side in, inside and along the vertical cut made on understock, leaving $\frac{1}{8}$ inch of the bevel cut of the scion exposed above top of understock. It must then be securely wrapped in place with string or rubber band, being careful not to damage the bark. (Fig. 7) The care from then on is the same as for cleft grafting, avoiding direct sun exposure that will burn the scion. A burlap cover over sunny side of jar will afford the necessary protection. When water is needed, a light application is sufficient. However, with the use of plastic bag covering over the container, water may not be required.

Whip Grafting is very interesting as well as practical. It is best accomplished when the scion is same diameter as understock and is usually 100% successful. You can whip-graft using a smaller scion than the understock, matching on one side only, but the result may not be as good. Sparse growing varieties and *Reticulatas* in particular can be made into beautiful plants if whip grafted on several suckers of larger plants (resulting from grafts that failed the year before). The writer cuts off large seedlings, in containers, about 6 inches from the base, allows 3 or 4 suckers to develop, then whip-grafts these suckers the following season. In one year, the graft union is indistinguishable, it heals so well. Whip grafting requires a heavy scion $\frac{1}{8}$ to $\frac{1}{4}$ inch diameter, from long, sturdy growth of new wood. An inch or longer sloping cut is made on scion to exactly match the same sloping cut on understock. It is notched with a tongue to hold the scion firmly and there is little room for failure as the cambium layers match in many places. (Fig. 8) This graft must be wrapped from top to bottom with a rubber band, being careful to bend the scion to match the stock evenly so that no cut part is exposed.

The same after-care procedure is followed as in cleft grafting as to covering and airing, but the grafting rubber is not removed. The entire section of the graft is covered with wax or tree seal and months later the rubber will deteriorate before pinching the growth. As in the case with all grafts, they can be mildly fertilized after one year to induce sturdy top growth.

Grafting is Fascinating! To see a tiny 2 or 3 inch twig grow into a robust plant, and a new super-size bloom appear in place of the little flower that was, will keep you grafting whenever possible. When you have run out of room or plants, you will find yourself occasionally grafting a newer one above the old graft and it grows just as well. Just keep the plants healthy and they will respond by growing a lifetime, cutting their heads off doesn't seem to bother camellias!

Sometimes when you place the jar over a new graft you cannot push the jar into the soil to seal out the air as abundant shallow roots won't allow it, therefore you must add soil or sand around the outside of jar, which also helps to hold it in place. To avoid accident, it is well to protect the jar with at least three stakes so that it will not be knocked over.

Selection of Understock: Use vigorous growing plants with long terminal growth—they usually have a wide cambium layer and the ability to heal and callus rapidly. Varieties mostly used are *Sarah Frost*, *Pink Perfection*, *Prof. Sargent*, *Barbara E*, *Eureka Variegated*, and vigorous seedlings, especially those with large leaves. Any healthy camellia can be grafted, but if it is a slow growing type, the grafted top may overtake the trunk of the understock and become top-heavy in time.

Tools Required: Sharp knife, razor blades, small saw, rubber bands or string, small screwdriver, plastic bags or jars (gallon size or larger is best). A magnifying glass comes in handy in the case of poor vision.

CAMELLIA SOIL ANALYSIS *(Continued from Page 8)*

tions of salts as evidenced by the high electrical conductivity and excessive accumulation of chlorides, etc. These high concentrations could increase the plant sensitivity to low humidity and hot weather. First plant symptoms would be a loss of turgidity in the flower and then in the leaf.

The results of analysis No. 2 prompted the owner of it to throw away his soil mix, but not soon enough to prevent it from having killed two newly potted azaleas.

Phosphate is roughly 2 to 3 times too high in the containers. It should be born in mind that the element phosphorus usually "fixes" and is not easily corrected by leaching as are most of the other elements. A much lower use of phosphate would be in order; application might be restricted to the original potting mix and this should be sufficient for two or three years. Place the phosphate in the root zone rather than on top of the soil surface as it does not easily translocate through the soil.

It should be noted here, however, that a high phosphate analysis does not mean that the phosphate is always available to the plant because of the tendency of phosphate fixation especially in acid soils. Dr. Tokuji Furuta, in his chapter on nutrition of Camellias in Tourje's "Camellia Culture," has stated that the 3-5-4 elemental relationship of nitrogen, phosphorus and potassium produced the best growth. This should not be mistaken to mean that one should apply a fertilizer bearing an analysis in the ratio of 3-5-4. The intent is that of element relationship *available* to the plant from the soil. The continued use of a fertilizer having an analysis in the proportion of 3-5-4 would probably create an overly high residual of both phosphate and potassium in the soil.

The accumulation of salts in container stock also indicates the potting mix is either too compacted to leach excessive salt accumulation or that the grower is not properly irrigating. Thorough irrigation in this sense would be the flushing of all soil particles so that the excessive salts are carried out of the container via the water drainage holes at the bottom of the container. Leaching is indicated only when there is a tendency for existing conditions to create a build-up of salts where the plant is growing.

We must not overlook the most important fact that *efficient management of fertilizers is the art of feeding the plant rather than the soil*. This would lead to the suggestion that a leaf analysis might be made along with the soil analysis to see if the soil nutrients are in a form which can be absorbed by the plant. Plants have been known to starve, quite literally speaking, when there was an overabundance of some elements in the soil.

The conclusions herein are definite only to the described soil samples. However, the report may be of sufficient significance to stimulate you to look for a better understanding of your own problems of Camellia nutrition. You will find, as we have, that there is no such thing as an over-all normal, due to the infinite complexities specific to each separate soil.

Let me list one final conclusion which also may have occurred in the thoughts of the reader. The diversity of soil samples and programs of additives, underlines the adaptability of the Camellia to complexities forced upon it. This same diversity makes it only too clear that the fancier does *not* always have the same quality to adapt himself to the simple earthy requirements of the Camellia.

THE SOUTHERN SCENE

Mrs. M. J. (Lilette) Witman, Macon, Ga.

Last January the most rigorous freeze ever to grip the Gulf States wiped out entire nurseries almost overnight. Trees and shrubs that had always been considered suitable to these areas, such as Sago Palms and palm trees, some of the latter reaching thirty feet in height, were killed. These had to be removed promptly from highways and parks leaving enormous gaping holes to greet the incredulous visitors. Such catastrophes occurred in New Orleans, Shreveport and Mobile among other centers.

Dr. Womack reported from Shreveport that the temperature in that city dropped overnight to three degrees, with ice and snow to make matters worse, over a period of four days. Small wonder that the American Camellia Society's convention had to be moved from Shreveport to the more fortunate city of Charleston, S. C. at the last minute. We hear that Texas camellias were also quite severely damaged, and Mrs. C. M. Gooch reports from Tennessee that Memphis suffered almost a total loss of these shrubs. "Among the *C. sasanquas* the MINE-NO-YUKI were all killed, no matter what their exposure was," she writes. "SETSUGEKKA, ROSEA, CLEOPATRA, and SPARKLING BURGUNDY seem to have come through best. The VERNALIS and HIEMALIS have been desperately hurt. All my SHISHI-GASHIRA, SHOWA-NO-SAKAE and DAWN are gone. Of the WILLIAMSII hybrids DONATION came through the best. Among the *C. japonica* the DAIKAGURA family seems more uniformly damaged. Dr. TINSLEY, MAGNOLIA FLORA, WILLIE HITE and GOV. MOUTON seem to have suffered the least."

In Mobile, Alabama, the thermometer dropped to seven degrees, whereas in New Orleans it registered as low as four degrees. This writer visited Mobile shortly after the January freeze, then again about a month later. During my first visit I was dismayed and very sad indeed to note the extent of the destruction. Everywhere was one mournful sight after another. The growers to whom I spoke then seemed gloomy and discouraged. A month later the miracle of Spring awakening had brought a total change in the looks of the vegetation and in the outlook of men. Some nurserymen had acquired a new philosophy and a new faith. All was not lost after all. The growers to whom I spoke then seemed to agree that all the plants in containers set above the ground had perished, thousands of them, but those planted directly in the ground, large or small, had shown an amazing, almost unbelievable resistance to the extreme temperatures. Mr. Ray Davis stated that perhaps this tragic experience taught nurserymen a lesson: "We had chosen to do things the easy way like growing ornamentals in cans, but we know now that there is no easy way to success. We must return to sounder practices, although it means that we will have to work twice as hard. We must take better care of our stock, especially plants grown in containers. No, we are not defeated. How could we be when we see what Nature is doing for us right now?"—and he pointed at the tender new leaves everywhere. Mr. Davis also mentioned that, although he believed all his buds had been killed, two of his oldest shrubs bloomed beautifully after the freeze, just as if nothing had happened—the LAWRENCE WALKER and the LAWRENCE WALKER VAR., which led him to believe that perhaps the almost forgotten varieties may still be our most trustworthy friends.

Mr. K. Sawada reported that at Overlook all ornamentals in cans, including camellias, sasanquas, azaleas were gone. Flowerwood, we understand, had the same experience, whereas Semmes, who unfortunately had everything in cans, was almost completely wiped out. The only nursery in Mobile that came out of this holocaust practically unscathed was the Riverview Nursery run by Les Richards. It is located on a point surrounded by the tempering waters of the Old Fowl River. Les Richards pointed to this writer that only the outside rows of camellias in cans—those most exposed to the icy North Eastern winds, had been damaged. The others were all putting on rich new growth as usual. In order to protect these outside rows in the future Les has thought of an interesting device—a foam plastic collar, 1/8 of an inch thick, valued at only a few pennies, with which he is planning to line the sides of the cans.

Mr. Charles Butler, ACS director for Alabama, obtained a list of the *C. japonica* that performed exceptionally well in his state throughout this unusual cold spell. This list was compiled by the members of the MOBILE MEN'S CAMELLIA CLUB, and of the seventy-two varieties listed besides hybrid DONATION, those that performed the best are MAGNOLIAEFLORA, DR. TINSLEY, VILLE DE NANTES, JESSIE KATZ, ELEGANS, RUTH ROYER, DONCKELARII, H. A. DOWNING, REV. JOHN BENNETT, LADY CLARE, LADY VANSITTART and BERENICE BODDY.

It seemed to be the consensus of opinion among the growers to whom I spoke that the following rules would be wise to follow after severe freezes:

1. Remove dead blooms from shrubs.
2. When certain that the flower buds are completely killed it is better not to leave them on the plants.
3. Injured camellias should be given the care one would give to a sick person i.e. careful amount of water, food sparingly and correct spraying.
4. Watch constantly for the dreaded dieback.
5. Do not attempt to defoliate your shrubs even though the leaves look dead or partially dead. The dead ones will fall in time. Those that are still half alive will be of tremendous help in the continuation of the natural processes of the plants.

I must report here that, due to one of those inexplicable and mysterious whims of Nature, the South Eastern States of Georgia, the Carolinas and Florida were spared the tragedy that befell the rest of the South. In Georgia camellias have never bloomed more profusely and beautifully. Masee Lane Gardens outside of Fort Valley, Ga. offered once more to the avid visitors the magnificent sight of their perfect shrubs and blossoms—perfection which Dave Strother alone can achieve. Thousands of camellia worshippers screamed again to this wonderful "camellia shrine."

After my last return to Alabama I could not help thinking that it would be well for all camellia fanciers to remember, when disaster strikes, the fine spirit of these men who, in the face of terrific financial loss, refused to lose faith in the "seasons yet to come."

COVER FLOWER

The hybrid camellia 'Carl Tourje' is described as a large (5½") semi-double, of soft pink having shadings of deeper pink, with wavy petals. It is a vigorous, upright, open grower and it blooms mid-season. This excellent hybrid was developed in the Huntington Botanical Gardens, San Marino, California, and it first flowered in 1958. It was obtained by crossing a variant of *C. pitardii* with pollen of *C. reticulata* 'Chang's Temple.' The pitardii parent was obtained from seed imported from China by E. C. Tourje. The illustration is from a water color painting by Paul Jones and is reproduced by courtesy of Mr. Tourje and the Huntington Botanical Gardens. This fine hybrid is expected to be generally available in about two or three years.

NEW CAMELLIA SOCIETIES ORGANIZED

Within the comparatively recent past, several new camellia societies, of both local and international interest, have been organized. Full details will be given in our next issue; meanwhile, here are the bare essentials about some of them:

Peninsula Camellia Society: held its first meeting Jan. 24, 1961, first show in February, 1962. Affiliated with the American Camellia Society. Present membership—43. Meets fourth Tuesday each month September-April (except December) at Casa de Flores, 735 Walnut Street, San Carlos, Calif. Address: 2327 Casabona, Belmont, California.

Joaquin Camellia Society: Organized Jan. 25, 1962. Present membership—33. Meets first Wednesday each month September-May at Lodi Public Library Auditorium. Annual dues \$6.00 for husband and wife, \$4.00 for single person, payable to Treasurer, Karn Hoertling, 336 Eureka Ave., Lodi, Calif. Members receive *The Camellia Bulletin*.

Modesto Camellia Society: Founded May 14, 1962, with 17 members. First camellia show March 17-18, 1962. Meets second Monday each month October-May at Modesto Junior College. Dues \$5.00 (includes subscription to *The Camellia Bulletin*). Interested persons contact Dwight D. Wait, President, c/o Modesto Junior College.

THE 17TH ANNUAL CAMELLIA SHOW IN REVIEW

Evalyn K. Bell, Walnut Creek, California

The 17th Annual Camellia Show theme—"North, South, East and West"—proved to be one of complete unity no matter what direction! A beautiful show, with complete cooperation from all members in all departments. An attractive entrance led guests through a garden wall into a magnificent view, dear to all lovers of camellias—tables and tables of blooms of the highest quality.

The entire show had an overall inviting appearance with spacious displays, legible signs, good lighting, and unity and beauty.

The theme was carried out most effectively in a large, free standing map of California with *Camellia Studded* stars pointing directions to North, South, East and West. Surrounding this sign and also used throughout the show at important locations were camellia plants in glorious bloom. The show was designed by Landscape Architect Bob Graves, and ran very smoothly because of careful advance planning and much work by President Dr. Fred Heitman and Show Chairman Lloyd Smith and their committees. Judges in all divisions were of the highest caliber and came from many parts of the state. They, too, shared the enthusiasm of others who viewed the show.

A large sign over the entrance to the flower arrangement room was designed with camellias and magnolia leaves. On either side of the door were two topiary trees made with magnolia branches and beautiful pink camellias. These proved educational and were much admired.

Other educational exhibits included the corsage booth, demonstrations of grafting, an educational exhibit on culture by the Mt. Diablo Men's Garden Club, and a display of excellent books on camellias. One of the special educational features of the flower arrangement section was that all plant materials used in the arrangements and the name of each camellia used was indicated. Again the flower arrangers give a vote of thanks to Mr. and Mrs. Harold Paige and Mr. and Mrs. David Feathers for providing such elegant blooms. As one arranger said, "I hope I can do justice to these gorgeous flowers."

Those who visited the show saw an abundance of beauty in both cut blooms and floral designs. They were given a bulletin of the Northern California Camellia Society which contained a wealth of information on all phases of camellias.

Visitors from all over the state attended and members and guests seemed to beam with enthusiasm for another show which was well handled from the very beginning to the final closing.

More and more members participated in the arrangement section—especially the junior members. This was a well represented section with some fine arrangements—take a bow, Juniors!

A special nicety was the appreciation expressed at the luncheon, to their wives by Dr. Heitman and Lloyd Smith for their patience and good work. This writer would like to conclude with a toast to all wives and especially understanding husbands as well.

Lists of the horticultural exhibits winners and flower arrangements winners, including the names of honored camellias, follow:

SWEEPSTAKES COMPETITION (awarded on basis of blue ribbons only)

Mr. Newton Pratt, Sacramento (winner)	35 ribbons
Mr. and Mrs. S. B. Davi, Pittsburg (runners-up)	32 ribbons
Allan S. Eckendorf, San Jose	28 ribbons
Richard Roggia, San Jose	(tie) 22 ribbons
A. M. Patterson, Concord	(tie) 22 ribbons
Milo E. Rowell, Fresno	13 ribbons
Warren O. Addicott, Fresno	(tie) 12 ribbons
Amos Kleinsasser, Bakersfield	(tie) 12 ribbons
Thomas A. Sertich, Sacramento	11 ribbons
Harold E. Burnette, Castro Valley	10 ribbons

TROPHY WINNERS

SWEEPSTAKES TROPHY won by Mr. Newton Pratt, Sacramento.

BEST FLOWER OF SHOW (JAPONICA)—H. L. Paige Trophy won by Mr. A. M. Patterson of Concord—flower *Reg Ragland Variegated*. Other Blooms in Court of Honor: *Angel, Betty Sheffield Supreme, Dixie Knight, Donckelaari, Emmett Barnes, Lotus, Mrs. D. W. Davis, Quaker Lady, Reg Ragland, R. L. Wheeler, Spring Sonnet, Tomorrow, Vulcan*.

BEST RETICULATA—Mary Elizabeth Purcell Brown Trophy won by Mr. Roy Tess of Orinda—flower *Tali Queen*.

BEST HYBRID—*Fluted Orchid*, grown by Mr. W. J. Brown of Sacramento.

BEST SEEDLING—D. L. Feathers Trophy won by Mrs. C. B. McKee of Sacramento—japonica seedling of *Joshua Youtz* parentage.

BEST GROUP OF THREE FLOWERS (JAPONICA)—Barlow W. S. Hollingshead Trophy won by Mr. Amos Kleinsasser of Bakersfield—flower *Vulcan*.

BEST TRAY OF SEVEN FLOWERS (JAPONICA)—Clifton W. Lattin Trophy won by Mr. and Mrs. S. B. Davi of Pittsburg—flower *Frizzle White*.

BEST TRAY OF TWELVE OF ONE KIND (JAPONICA)—Dr. G. Myron Grismore Memorial Trophy won by Mr. Haig Ashuckian of Lafayette—flower *Adolphe Audusson Special*.

BEST TRAY OF TWELVE DIFFERENT JAPONICAS—Dr. Fred E. Heitman Trophy won by Dr. D. Jackson Faustman of Sacramento.

BEST THREE RETICULATA FLOWERS—Winner Mr. Roy Tess of Orinda—flower *Shot Silk*.

MOST OUTSTANDING CONTAINER-GROWN PLANT (JAPONICA)—Sylvia May Wells Trophy won by Mr. and Mrs. A. M. Patterson of Concord—*Shiro Chan*.

BEST RETICULATA PLANT—Winner Mr. S. Robert Juch of Oakland—*Prof. Tsai*.

FLOWER ARRANGEMENT DIVISION WINNERS

MOST OUTSTANDING ARRANGEMENT IN SHOW—American Camellia Society Award—won by Mrs. Richard Romaggi of Vallejo.

BEST IN ADVANCED DIVISION—Geneva McConaughy of San Jose.

BEST IN BEGINNERS' DIVISION—Mrs. Lincoln Grayson of Pleasant Hill.

BEST IN ORIENTAL DIVISION—Mrs. George Toriyama of Martinez.

BEST IN JUNIOR DIVISION—Kent Pember of Walnut Creek.

BEST IN DIVISION C—Mrs. Donald Daniel of Concord.

A REPORT ON THE 1962 SACRAMENTO CAMELLIA SHOW

J. Carroll Reiners, Sacramento, California

Nothing ever happens to me. But something did happen to Mr. Bernal Cook of Sacramento at the 38th annual Camellia Show sponsored by the Camellia Society of Sacramento on March 3rd and 4th, in the Sacramento Memorial Auditorium.

In the beautiful show setting designed by veteran show-designer Erwin Nowak, and before the eyes of 5,000 show visitors, Mr. Cook received the most coveted trophy for the Best Flower in the Show. There was no question among the 18 judges that the Camellia japonica GIGANTEA was a show stand-out. To Mr. Cook, the decision was incredible because on March 3rd it was his first in everything. It was the first time that he had ever entered a Camellia in a show, and the only flower that he entered in this show; further, it was the only bloom on his GIGANTEA bush. And, lastly, he did not want to enter it in the first place!

Truthful reporting requires that we acknowledge the decrease in the number of blooms entered in the Show this year, though certainly the quality in all respects was excellent considered the inclement weather preceding the Show. During the week of the Show we had three consecutive days with temperatures dropping below 25 degrees in outlying areas and including a "black frost" with gale winds four days before the Show. This climate, coupled with a very cold winter, caused more than 50% of the

Camellia cultivars to remain without blooms. It is astonishing, in some respects, and a credit to the hard work of President S. Lawrence Boque and Show Chairman Irwin K. Sibole, that 6,321 blooms were exhibited at the show.

Each year an analysis shows some new fact of interest. In this latest case, weather caused an inversion in the proportion of popular entries. The following are excerpts from the records comparing a few of the cultivars entered in the 1961 and 1962 shows:

CULTIVAR	1961	1962
FINLANDIA	115	32
FRED SANDER	50	6
GIGANTEA	120	23
PINK PERFECTION	248	21
PURITY	222	17
SHIRO CHAN	43	3

Only three cultivars showed substantially more blooms in 1962:

LADY CLARE	144	160
NAGASAKI	46	59
PROF. C. S. SARGENT	19	81

An unofficial opinion voiced by experts indicated that the most striking new entry in this show was a very large Mrs. D. W. Davis paeony form, exhibited by Mr. Tom Serrich.

The following are the Trophy winners and the runners-up:

JAPONICA, single bloom

1. GIGANTEA, Mrs. Bernal Cook; 2. WHITE GIANT, Mrs. Robert L. Roberts; 3. KRAMER'S SUPREME, Mrs. Charles Vanina; 4. CARTER'S SUNBURST, Mrs. Charles Vanina; 5. REG RAGLAND, Mrs. George McKee.

JAPONICA, three blooms

1. SWEETHEART, Mr. and Mrs. Jack D. Hansen; 2. COLLETTI, Mr. Newton Pratt; 3. C. M. WILSON, Mrs. Charles Vanina; 4. CHARLOTTE BRADFORD, Mr. A. S. Eckendorf.

JAPONICA, six blooms

1. LADY KAY, Mr. I. W. Nair; 2. FLAME, Mr. Carter M. Sutherlin; 3. ANITA, Mrs. F. J. Rehman; 4. SARASA, Mr. and Mrs. S. B. Davi.

RETICULATA, single bloom

1. CRIMSON ROBE, Mrs. Charles Vanina; 2. TALI QUEEN, Mrs. Charles Vanina; 3. BUDDHA, Mr. Richard F. Roggia.

RETICULATA, three blooms

1. CHANG'S TEMPLE, Mr. Jack Mandarich; 2. BUDDA, Mr. Richard F. Roggia.

HYBRID CAMELLIA, single bloom

1. E. G. WATERHOUSE, Mr. Howard E. Burnette; 2. DONATION VARIEGATED, Mrs. Roy O'Neil.

MINIATURE CAMELLIA, single bloom

1. MEMENTO, Mr. Newton Pratt; 2. FIRCONI, Dr. and Mrs. D. Jackson Faustman.

OUTSTANDING SEEDLING AWARD

1. Hybrid seedling X-10, "DOROTHY JAMES," Mr. Vernon R. James.

COLLECTION OF EXACTLY 15 NAMED CULTIVARS

1. Mr. Newton Pratt.

COLLECTION OF 25 TO 40 NAMED CULTIVARS

1. Dr. and Mrs. D. Jackson Faustman.

SWEEPSTAKES AWARD

1. Mr. and Mrs. S. B. Davi from Pittsburg with 44 blue ribbons; 2. Mr. Richard F. Roggia from San Jose with 34 blue ribbons.

The flower arrangements were masterfully directed by Iva Gard Shepard, her chosen theme being "Magic of Make-Believe." There were 96 entries in competition and five complimentary exhibits. Arrangement winners were: 1. Mrs. Michael Thomas; 2. Mrs. Harold Smith; 3. Mrs. Onto P. Bragan.

NATURE PUTS CAMELIAS IN THE DEEP SOUTH TO A SURVIVAL TEST

Charles Lee Keeton, Long Beach, Mississippi

About once a century Mother Nature puts Deep South plant life to a survival test to cull out the weaklings. And for this century the test was in operation during mid-January of 1962 when the temperature went down to 9 above zero here beside the Gulf of Mexico and stayed below freezing for four days. Needless to say, the weak died or were crippled, and the strong survived and won new respect. This applies to all plant species of this section, but we'll avoid the subject of palms, citrus and other tropical and semi-tropical plants and stick to camellias.

All buds of Alba Plena were destroyed, most plants suffered heavy defoliation and some failed to recover. But, of course, regardless of what man thinks of it, Alba Plena is not one of which Nature is proud. It was never meant to survive because normally it has no seed, and certainly it has little ability when it come to "binding" water. Man has been able to perpetuate Alba Plena and many other closed-center formal doubles, but he has never figured any way to teach a plant the basic fact that "bound" water does not freeze and that "free" water freezes causing cell damage. Some camellia varieties and some species have survival ability, and some do not. Naturally, the fact that Nature regards Alba Plena as a weakling makes us love it none the less, but we must face the fact that it needs lots of help in the battle for survival.

Fortunately most camellias have the ability to "bind" water as the days get shorter and the temperature lower. Some have this miraculous ability to such a degree that leaves are untouched and even their flower buds survive and bloom. Others have the ability only to the degree that leaves survive but flower buds are frozen. Then, there are varieties which seem to do a half-way job of protecting both leaves and buds but suffer considerable loss of both in a genuine survival test.

Alba Plena is admittedly at the low end of the survival totem pole, while Berenice Boddy is, to date, still tops at "Binding" water and thereby surviving. This was quite obvious here on the Gulf Coast. We found cold resistance of flower buds and of leaves and twigs about as rated in published lists. Donckelarii (and Ville de Nantes and Lady Kay), Elegance, Flame, Lady Clare, Duchess of Sutherland, Magnoliaeflora, etc. all lived up to their reputations for hardiness. I can't honestly add many new ones to the list. Plants of newer popular varieties such as Tomorrow, Guilio Nuccio, Drama Girl, etc. survived fairly well, but most flower buds were killed. Edna Campbell is one, however, which truly proved a heroine just about on par with Berenice Boddy. There was no evidence of any damage whatever to this plant other than to buds showing color at the time of the freeze. Within a few days this variety was once again putting out large top-quality blooms.

Within a month after the freeze about three-quarters of all varieties were putting out blooms of varying quality. Though most southern shows were cancelled, our Gulfport show at this time displayed almost 5000 unprotected outdoor grown blooms, half as many as at the same time last year. But amazingly, 330 varieties were exhibited this year in spite of the freeze, as compared to slightly more than 400 last year. The quality of the blooms was off, but it would have been worse if Nature hadn't relented immediately after the freeze and supplied a month of perfect camellia weather. Even so, the 1962 blooms were for the most part dwarfed, misshapen or otherwise below par. In our show, incidentally, a Ville was Best in Show, Lady Kay, Runner-Up, and most honor blooms were the old reliable varieties, rather than the new ones.

In trying to analyze freeze damage in various gardens the most notable fact was the apparent lack of any consistent pattern. Joshua Youtz, for example, was hurt as badly as any variety in my own yard and in various other gardens. Yet I saw some which suffered no damage other than to flower buds.

Plants in full sun seemed paradoxically to survive in better shape than their neighbors in semi-shade or deep shade. Ordinarily in mild freezes in previous years plants in

the sun were burned and damaged most because they thawed too rapidly. This time, such did not prove at all true. In our own layman fashion all we can figure out as a possible reason for the superior survival of more exposed plants is that they may have been just a bit more hardened off than more protected plants. Actually, however, since this was mid-January, our plants were all about as close to dormant as camellias ever get.

Again paradoxically, smaller plants seemed to suffer less damage by far than the large plants. This is exactly opposite what we ordinarily would expect. Possibly these larger plants, mostly under our fine live oaks and pines, might be considered as not absolutely in the "pink" because they operate in competition with the trees for water and nutrients. Though we had rain immediately prior to the freeze, it is quite possible that the large plants under trees could have lacked moisture. In our normal winter weather when the temperature may occasionally slip a few degrees below 32 before dawn and then rise after the sun starts shining, these trees are real protection, but not this time! In fact, they seemed a liability.

About all we can truthfully say that we learned in this expensive test is that vigorous plants of the hardier varieties fared best. One yard here stood out alone as an example to us on this Coast in that it had no twig damage and little leaf damage other than some slight burns, while its neighboring yards were hurt. This yard was relatively unshaded, but the key to plant survival in this particular garden lay in the fact that the owner had applied a light application of a balanced fertilizer containing 5% nitrogen in both October and November. This is not local practice, but its principle might well be considered by all camellia growers.

Most of us have gone along with the idea that applications of nitrogenous fertilizers should be stopped in late spring or early summer. Most of us use only an application of potash in the fall to help harden off the plants. Now, I personally am of the opinion that, in our sandy soil where nitrogen leaches out so quickly, it is obviously sound reasoning to apply a little nitrogen after the weather begins to cool and the days shorten. The camellia is never completely dormant and apparently benefits from this last effort to prepare it for winter. Some folks fear that nitrogen will start new growth, but lightly applied after the "binding" of water has started, we don't believe this will prove true.

Possibly in a heavier soil the nitrogen in late fall might not be necessary, but we now know that plants starved even slightly are not quite up to coping with 9 degree weather.

We saw no evidence of great freeze damage to the hybrids here. My Felice Harris plant, aside from frozen flower buds, was not hurt though caught at the peak of bloom. Nina Westinghouse, one which came to us a few years ago from we know not where and whose ancestry we don't know, came through with even the flower buds intact to put on a showy display of blooms within a week after the freeze. A young plant of Waltz Time, with its wonderful japonica-type leaves, was untouched.

Of the species other than japonica and sasanqua I can't add first-hand knowledge except concerning *Granthamiana*. This species from Hong Kong seemed more sensitive than has been reported. The tip of each leaf was burned on my own and every other plant I saw. The plants survived, however.

All the preceding pertains to plants in the ground. Most container plants had their roots frozen, though here again, there were plenty of exceptions. Some were defoliated at once and never recovered, while others wilted gradually and finally died.

YELLOW CAMELLIA AT LAST?

In the great eagerness to obtain the much sought-after yellow, and thus enlarge the color range of camellias much as was done with roses not so long ago, there has to date been many a false alarm. Notwithstanding all the time and attention paid to this objective by camellia breeders, their efforts to date have not yielded encouraging results. Now it appears that nature may have taken matters into her own hands, for a chance seedling in the garden of Mike and Lilette Witman in Macon, Georgia, has for the second year

yielded blooms which no less an authority than Mr. Dave Strother is reported to have pronounced as having a true yellow color and not merely one in which the yellow is stamen reflection. While the writer has not seen the bloom, color slides of it in which a pure white flower is included for comparative purposes show a distinctively different true yellow tone in the several flowers and buds of the "yellow" seedling. Without doubt, this is the most promising approach we have made to date in the search for yellow color. It is understood that the Witmans do not intend to release the seedling for another year, at which time it is planned to turn the plant over to the Camellia Research Advisory Committee if it holds its color. The Witmans have, over the years, assembled a tremendous collection of species and hybrids and Mrs. Witman has made so many promising crosses of species that something spectacular seems certain to result but we have no way of knowing whether this startling development may be attributed to their extraordinary efforts, directly or indirectly, or is merely one of those unaccountable natural phenomena for which the camellia is so celebrated.

CAMELLIA FERTILIZER EXPERIMENT *(Continued from Page 6)*

a year. Again I have no confidence in these figures derived from measuring the caliper and the height, because of the variation in branching. Reference to the flower diameters shows the same difference as the increase in weight. The liquid feed group has an average flower diameter of 4.13 inches, the dry feed on a six weeks basis 3.90 inches, and dry feed on a three times a year basis 3.84 inches.

Why was a difference found between liquid and dry feed for the *Elegans* and not for the *Kumasakas*? It can only be conjectured that *Kumasaka*, being naturally a slower grower than *Elegans*, responds to fertilizer up to a point, and more fertilizer beyond that point produces no improvement. However, no startling difference is noted in these experiments between dry feed on a six weeks basis and light liquid feed on a weekly basis. It is reasonable to conclude that either method is satisfactory from the standpoint of plant growth and quality of blooms. Furthermore, it can be concluded that dry feed on a three times a year basis applied February 1, May 1 and August 1 is effective and adequate for those who are not reaching for top flower size. The type of dry feed is important in my opinion. It must be similar to the type used here, that is, a combination of chemical fertilizers and a slow-acting fertilizer like cotton-seed meal. The fertilizer formulas given here have been devised to give a minimum of salt build-up, and at the same time, quick action together with delayed action. In both the liquid and dry formulas, note that nitrogen is present in the form of nitrate to give fast action. It is also present in the form of ammonia to give delayed action. The ammonium compounds tend to sink deeper into the soil, where they are converted by microorganisms to nitrate. The nitrate is in a form immediately available for plant food.

STOCK LIQUID FERTILIZER

12.5 lbs. Potassium Nitrate
17.5 lbs. Mono Ammonium Phosphate
20.0 lbs. Ammonium Nitrate

Dissolve in 50 gallons of water. At time of use, $\frac{3}{4}$ gallon of this is made up in proportion to 5 gallons of water and fed through irrigation for another dilution of 1 to 30. This is so dilute that it is not harmful to foliage if in direct contact. If water is alkaline, add enough Phosphoric Acid to bring the irrigation water to a PH of 6.

Ratio of Nitrogen: Phosphorus (P_2O_5): Potassium (K_2O) is 2.2:1.

DRY FERTILIZER

200 lbs. Cottonseed meal	10 lbs. Sulphur
24 lbs. Ammonium Sulphate	45 lbs. Potassium Nitrate
160 lbs. Superphosphate	24 lbs. Ammonium Nitrate

Ratio of Nitrogen: Phosphorus (P_2O_5): Potassium (K_2O) is 2:2:1.