THE Camellia REVIEW

A Publication of the Southern California Camellia Society

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Two dollars

Southern California Camellia Society Inc.

An organization devoted to the advancement of the Camellia for the benefit of mankind — physically, mentally and inspirationally.

The Society holds open meetings on the Second Tuesday of every month, November to April, inclusive at the Hall of Environmental Education, Arboretum, Arcadia. A cut-camellia blossom exhibit at 7:30 o'clock regularly precedes the program which starts at 8:00.

Application for membership may be made by letter to the Secretary. Annual dues, $15.00

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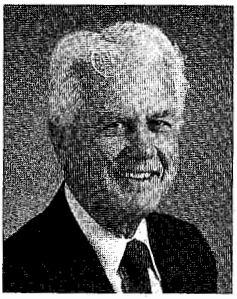
The cover flower is named "Donnan's Dream." It is white washed and shaded orchid pink. Developed and released by Nuccio's Nurseries in 1984, it is a medium to large, formal double (naturally) with a bushy, upright growth pattern. Donnan's Dream blooms early to medium.

—Photo by the courtesy of Bill Donnan.



THOUGHTS
from the editor

Recently, I overheard arguments as to whether the purpose of the camellia shows was for the benefit of the exhibitors or the public and it brought on some reflections.

In my early gardening days, I was fond of camellias and filled the yard with the old standards such as Purity, Alba Plena, Pope Pius, Finlandia and Glen 40. Bill Goertz was my across the street neighbor and encouraged me to go to some of the camellia shows. I marveled at those blossoms, so Bill showed me how to graft and provided the scions from his extensive collection. Early success in grafting mature plants was so encouraging that before long I had grafted every plant in the yard except a couple of my wife's favorites which she guarded carefully as soon as the grafting tools came out.

As business became less hectic, I finally began to attend the Camellia Society meetings, found it enjoyable and joined with my wife, LaVerne. There is a camaraderie and a way of life which has evolved around the camellia hobbyists. The level of knowledge, accomplishment and competition range from intense, as exemplified by past and present giants, to a milder interest with more emphasis on camellias in landscaping than in propagation and showing.

This brings us back to the original thought. The show exhibitor has spent many joyful hours cultivating his blossoms and wants a chance to display them and have them judged in relationship to his peers. If there were no public invited, he would still show. The shows, however, expose many people to a beauty they have never experienced. Shows attract new growers, encourage modest growers to become more deeply involved and out of these come new members for the camellia societies.

Shows are for the benefit of both the exhibitors and the public.

In the Sept./Oct. issue I asked for articles, clippings, comments and letters from any and all. Don't be concerned about literary style. The thought is the important thing.

Judges Symposium

A camellia judges symposium will be held under the auspices of the Southern California Camellia Council. The date for this important event will be Saturday, January 19, 1985. The location will be the Educational facilities of the Descanso Gardens in La Cañada.

The symposium is being conducted by Ernie Pieri, Sergio and Elsie Bracci. Discussions will be held by well known Southern California Camellia Hobbiests. Slides will be shown of the 1984 Camellia Show winners and many of the newer cultivars for identification and study. There will be a no-host smorgasbord luncheon served in the Exhibition Building kitchens at a nominal charge.

The Symposium will start at 9:30 AM and will terminate by 4:30 PM. This event is designated as a refresher course for all ACS Accredited Judges and as a required course for Novice and would-be judges. It should be attended by everyone who wants to be considered for a place on the roster list of judges for the 1984-85 Camellia Show season. Further information can be obtained by writing or phoning Ernie Pieri, 601 East Elm Avenue, San Gabriel, CA 91775 or (818) 287-5977.

CAMELLIA GROWING CONDITIONS AND OTHER CONSIDERATIONS, PART 2

by Robert and Shala McNeil

When a program is converted into an article after nine months some changes may take place in the intervening time, not only in information, but also in relationships. We are deeply saddened by the passing of Dorothy Pieri.

PREPARING BLOOMS FOR SHOWS

Some of our methods have changed over the years, but we still feel it is best to pick blooms in early morning or late afternoon when humidity is highest and petals have the greatest turgidity. At our place we had lights in our lath house, and could do our picking at two or three in the morning of a show day. Now we have no lights and must pick as late in the evening as possible, often with a flashlight. Having picked the best blooms we can produce we then need to get them to the show in the best possible condition.

We use a variety of boxes, arranged inside to protect the blooms and preserve them in transit. Many people use different kinds of boxes, some even custom built. For just a few blooms the clear plastic "sweater" boxes are good, but brittle. For taking many blooms to a show the brown waxed cardboard boxes from Wholesale Butchers work about the best that we can get for free. Cutting them down in height lets you get more of them in the trunk of a car and still leaves room for tall semi-double Retic blooms. We have always believed that close fitting lids are a necessity, but if we can get one of the ventilated styrofoam boxes in which table grapes are shipped from Peru we don't refuse it.

Cooling may be needed, too. From Ramona to Bakersfield is a long haul and the trunk of a car can get pretty hot. We used to buy blocks of ice and pack them around the boxes, also Ziploc bags full of ice cubes. Both of these methods left us with a pretty wet floor in our trunk, and made the boxes a bit soggy, too.

Nowadays we fill with water the rectangular clear plastic bottles in which Kern brand vinegar is sold and freeze

them. They are a good handy size and shape, quite effective, cheap (we make pickles), and re-usable for two to three years. Since there needs to be insulation between the boxes and the sun-heated trunk lid, we simply lay flat the suit bags in which are the clothes we brought along for the show dinner.

Outfitting the insides of the boxes is another consideration. The blooms have to have some way to keep their stems in water and something to cushion and separate them. The edge of a Reticulata leaf can saw a petal half way off in 150 miles! For the water supply we use the caps of spray cans, medication cups from hospital stays for medium and small, and even the caps from shaving lotion bottles for miniatures and species. When the blooms will have to stay in the boxes for eighteen to twenty-four hours we use a preservative solution called "Floralife," available at florists.

Padding or packing material has seen changes over recent years. Some people used to use shredded newsprint, but printer's ink spoils white or pink blooms. Some used or still use shredded waxed paper, some use the dacron fiber intended for fish-tank filters. We used to use shredded cellophane from Florist's Supply Houses until a scornful remark from a fellow exhibitor brought us up short at one of the Pomona Shows. The man walked down a display table and pointed here and there: "This bloom is from Ernie Pieri, see the waxed paper?" "This one is from Berkeley Pace, see the dacron?" "This one is from McNeil, cellophane." After that day we used far more care in inspecting and grooming each bloom we put on a table. Our breakthrough in padding came when the Handyman stores started selling a lightweight plastic foam for mattresses for backpackers. The stuff can be had in one inch thickness and cuts easily into the shapes, sizes, and spacing intervals you want to hold your blooms gently but firmly apart. It also holds a great deal of water without dripping much. That keeps a high humidity in the boxes. There is a drawback, of course. The surface is abrasive to petals, so we cover it with plain white wet paper towels.

One very important part of preparing blooms for shows in our opinion is placing blooms of different classes and divisions in different boxes and alphabetically within the boxes. This sounds altogether too "picky" right here and now, but when you arrive maybe a little bit late at a show after driving hours in a fog or storm, and might even have had to change a tire, and then have very little time left to lay out your flowers in a hurry, it's a great comfort to open the number one box and see Adolphe Audusson looking at you and not Tomorrow's Tropic Dawn. The longer time and care you took in the relative peace and quiet of your own lath house will then pay off in rapid and accurate placement on the display tables. We do that as rapidly as we can with proper attention to grooming and placing in the cup to be "looking at the Judge." You can take plenty of time to talk to your old friends outside the display room later.

In the matter of display cups, few show chairmen will object to you using your own cups IF those provided do not have the proper depth or diameter to display your blooms at their best. We often carry along a few cups of the sizes needed by our hybrids and species. To avoid seeming to identify our blooms we simply set them inside the cups provided.

WHAT CAMELLIAS DO BEST FOR US

When we lived on Kearny Mesa in San Diego we often won silver with small and miniature Japonicas and sometimes with Reticulatas. Occasionally we made the table of honor with large Japonicas. Only once did we ever win best large Japonica with an unusually perfect bloom at just the right time. Later on we built up a "stable" of non-Retic hybrids and other species that won for us often. Since we moved "up the hill" the winnings have been few, some smalls, miniatures, and

"gibbed" mediums, but our hybrids and species are gaining strength in the Ramona climate. Maybe they think that they are in Australia or New Zealand.

COMPANION PLANTINGS

We have made very little effort in this direction since killing several Camellias in the Adobe soil of Chula Vista in 1951 and '52. The late Julian Atherton of San Diego, who once shared the title of Mister Miniatures with Ernie, blew the minds of many of us by planting Japonicas in full sun. In the late sixties he had plants with three-inch thick trunks in rusted gallon cans. Of course the tap roots had gone through the bottoms years before. Shala and I were just getting started in Camellias at that time and I asked him about planting in full sun. He said that Japonicas spent the first two years trying to die, and that if they failed to do so, then they would thrive. Since then we have seen many Japonicas in full sun; some in the open, no shelter at all. There are even some very healthy ones on the grounds of the Bonneville Dam, near Portland, Oregon . . . This has taken a long time to get around to companion planting . . . In the spring of 1982 I dug ten holes in the ground just to the north of our lath house. The soil is mostly decomposed granite. Nine of the Elegans family and one Tom Knudsen went into the holes, with Azaleas between some and Leather Ferns between others. The Azaleas and Ferns loved it immediately and the Camellias took a year to decide that they would tolerate the radical change from years in pots. This will now be their second blooming season and Tom Knudsen is trying to die. The Elegans all have darker green and glossier foliage than ever and their buds are pretty big for this time of the year. Last year we were given some Violets, which we added to the strip and the blend of shades and textures is pleasing indeed.

For the last two years three species types in egg cans have wandered about the place trying to find a location where they would be happy. It may be two more years before they find places they like, but it won't be near the fruit trees that have to be sprayed with oil and lime every winter!

BILL GOERTZ

by Pat Greutert

Would you buy a used car from this man? You bet — if his name is Bill Goertz. Tall dignified Bill learned his successful selling skills promoting oil well equipment, not used cars, but a persuasive salesman he is.

Now 80 and retired, Bill centers his energies on his hobby — raising and promoting camellias.

His gentle manner hides a very competitive spirit which has lasted over the years from the UCLA basketball court where he played, to the camellia show Court of Honor where he likes to see his blooms exhibited.

Not content to merely raise camellias, he also wants the entire world to share his love for the flowers. His massive selling job makes quite a tale.

Bill developed a lovely reticulata seedling. Its deep rose upright petals swirl in and out making one think of First Lady Nancy Reagan in the type of ruffled designer ball gown she often wears.

One evening Bill mentioned his camellia to a friend, William Wilson. He told Wilson, now United States ambassador to the Vatican, that he would like to name his camellia "Nancy Reagan." Wilson passed the word along to Mrs. Reagan who wrote Bill that she would be "delighted" if he named the camellia after her.

Bill named the flower "Nancy Reagan" and had Nuccio's Nursery, the propagator, mail a plant to the White House in Washington. It is now in the First Lady's Garden.

Later he and former Camellia Review editor Bill Donnan arranged to meet Mrs. Reagan at the Santa Barbara White House and deliver a second plant to her.

Mrs. Reagan asked Bill's advice on camellia culture and jotted down his answers. Always the salesman, Bill not only gave her the advice, he got the names of ten Reagan friends to whom he delivered ten more "Nancy Reagans," further popularizing the bloom.

The Boehm Porcelain Company in England, at the suggestion of an American Camellia Society representative, cast the "Nancy Reagan" camellia in porcelain. Mrs. Boehm sent one of those flowers from a limited edition of 650 as a gift to Bill. It now graces a chest in the Goertz living room.

How did Bill get so involved with his hobby? In 1937, Bill recalls, he saw his first camellia, a Pink Perfection. The nurseryman who landscaped the new home where Bill and wife Ruth still live planted it by the front door. Bill enjoyed the flower but did not become particularly interested in camellias until later.

In 1946, seeking plants to mask a neighbor's garage, Bill and Ruth visited a nursery. They spotted some shrubs whose foliage they admired, bought six and planted them. They grew no blossoms.

A friend, the late Cliff Johnson who was well known in camellia circles, noticed the shrubs at their home and identified them as camellias. "Why don't you graft them and get some blooms," Cliff suggested. He showed Bill how.

Grafting so excited Bill that he soon began buying his own grafting rootstock and was off on the hobby which has lasted nearly 40 years.

Bill remembers the first ribbon he won. "Cliff Johnson encouraged me to enter one of my blooms in a camellia show at the San Marino Woman's Club. I had one of the biggest thrills of my life when I won a red ribbon. It was a second place, but no ribbon ever meant more to me," Bill says.

Bill, of course, went on to win many trophies and also to develop "San Marino" and "Al Gunn," his other reticulata seedlings.

A camellia doesn't fool around in the Goertz yard. If it doesn't produce

prize winning blooms, Bill lops it off and grafts on something new. Many of his plants have been grafted four or five times.

Two authors, Tom Durrant and Stirling Macoboy, chose stunning pictures of Bill's lovely flowers to enhance their camellia books which were printed in New Zealand and Australia.

Bill served as President of the Southern California Camellia Society and chairman of many flower shows. Society members so appreciate Bill's diplomacy and dedication that they voted him an honorary life member — rare recognition for a rare gentleman.

WINTER CAMELLIA CULTURE

by Wilbur Ray
Fresno, California

This is how the Rays (Wilbur and Mary Anne) practice winter camellia culture in Central California, specifically the San Joaquin Valley.

"Webster" tells us that winter is the cold season between autumn and spring; or, that in the Northern Hemisphere, it is the period from the winter solstice to the vernal equinox — that means December 21 to March 20.

To me, winter is that time of the year when the camellias bloom and we attend camellia shows and renew our friendship with other growers. It's a busy time of year; but, not really so busy so far as culture is concerned. In reality for us it is a period of relatively low maintenance

Watering remains a must; but due to the higher levels of humidity that come with our foggy periods, it is not required as often as was the case in the fall months. We water our plants with an overhead sprinkling system most of the year; but, with the onset of bloom, this is discontinued and hand-held watering becomes the order of the day. In dry spells watering takes place at least once a week — less often during rainy weather.

As an added note on Aphis control, this year we found that we needed to spray more often than previous years. Late in the fall we noted ants present in our lath house in large numbers, so the ground in and around the lath house was treated for ants. Since that time our need to control Aphis has dropped way off.

Late November or early December is the time to examine the several air-layers we started in April, to see if suffiient roots have developed to allow them to be separated from the parent plants and then potted up. This is the first year we have tried this process and it is being done in conjunction with our pruning program. Host plants are those having two trunks or low forks on the main stem. The air-layers are thus being tried on vigorous branches that were in undesirable positions.

As noted above — winter is the season when we go to shows and visit our camellia buddies; so it follows — that January and February are the months when we will come home laden with scions that will need grafting. We should begin preparing our understock for grafting at least by November by pruning heavily so the shock at grafting time will not be so severe.

Bloom cutting can be and is a continuation of the pruning and pinching program that never really stops. When cutting blooms for shows or for giving away, we cut to our own advantage, with regard to shaping and controlling the plants. This means that many times we cut with a long stem. Arrangers love this! If they are to be exhibited the stem is cut again to "show" length then boxed for transporting.

Seeds which were planted in August and September are by now usually ready to pot up. Another continuing chore is watching older seedlings' blooms and flagging those that are destined to become understock, as well as those we want to look at for another season.

As is the case with watering, feeding is continued almost year round. We keep a "sort of diary" of feeding,

spraying and grafting on the fly leaves of our Nomenclature books. We start a monthly feeding of Liquid 0-10-10 in November and continue this through January. A siphon proportioner is used to apply this feeding as we water.

One other use for this proportioner is the semi-annual application of Subdue which is applied with a watering to all plants in early winter and in spring. We have used Subdue for the past two years and we believe that its use has cut losses from root problems by a considerable amount.

This about sums up our wintertime culture activities with camellias.

Have a nice Christmas!

To remove tea and coffee stains from cups use a moistened paper towel dipped in baking soda.

Whole spices placed in a large aluminum tea ball, instead of a cheesecloth bag, are easy to remove.

WHAT DO YOU RECOMMEND?

by John L. Nichols

Just imagine that I have recently moved to Southern California. Perhaps I bought a home near the ocean in Long Beach or La Jolla. Maybe I've settled inland near Riverside or El Cajon. I've never grown camellias, but I think that those must have been camellias in Aunt Susy's back yard that I admired many years ago. You and I just met at this beautiful camellia show. I'm impressed with all those gorgeous blooms on display, and I've suddenly become anxious to plant camellias around my new home. I ask, "What varieties do you recommend?" What is your answer?

Before you answer, a little more conversation reveals that I want the following qualities:

a. Must be easy to grow in any of the many Southern California climates.
b. Must be reliable. Seldom fails to perform well.
c. Makes a good evergreen landscaping plant for my new home.
d. Since my spouse likes to display cut flowers inside the home, your recommended variety must impress visitors when displayed as a cut flower.
e. Yes, someday I might join your Camellia Society and enter shows, but right now I do not aspire to win trophies.

"Yes, I understand a bit about water, fertilizer, soil, drainage, and sun requirements — that is, after you just told me. I'll give the plants reasonable care, but don't expect me to devote all my spare time to camellias."

Now you, yes you, sit down and send your recommended varieties to:

John L. Nichols
1026 Flora Ave.
Coronado, CA 92118

John is the President of the San Diego Camellia Society. He will compile your recommendations into a single list. The combined results of this poll will be published in a future Camellia Review. The resulting List of Recommended Camellia Varieties for Southern California should provide excellent educational material for the beginning camellia grower and future Society member.

Take a few minutes and send your recommendations now.

INTEGRATED CONTROL PHYTOPHTHORA ROOT ROT

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PHYTOPHTHORA ROOT ROT is the most serious problem — a life and death matter — facing camellia culture today. This is a practical article about materials and methods for controlling *Phytophthora* root rot; but to get the most out of this topic, and hopefully truly to advance you in your efforts to combat this disease, I am going to review critically some of our current approaches to disease control and recommend what, for many, will be some new lines of thought and practice. If you are looking for the "quick fix," this article is not for you. There is no quick fix for *Phytophthora.* Real control of root rot requires attention to many factors, not the least of which is proper culture. In this article we will look at how to deal with the whole situation. I am not going to recommend a sole, specific chemical control as the major answer. Instead, I will recommend a much broader approach to the practical and effective control of root rot.

Many of us are quick to jump on the chemical bandwagon as a sole or overriding approach to the control of plant diseases. Even when we are presented with a very effective chemical, we frequently abuse it through over-use or misapplication. The compound benomyl (trade name — Benlate) is a good case in point. It was hailed upon introduction as a panacea for many fungus disease problems; but after a few years, it had become ineffective in some areas because of misuse. Similar problems arose with Streptomycin which, at first, was extremely effective in controlling some bacterial diseases. Readjustments in thinking and in the methods for employing such chemicals have restored some usage of these otherwise good materials. Through analysis of mistakes, plant disease control emerges with new understanding and a very productive outlook.

Don't get me wrong. This article is not going to argue against the use of chemicals; instead, I am going to discuss proper integration (coordinated use) of chemical controls with other nonchemical measures for the purpose of managing *Phytophthora* root rot in the nursery and garden. Notice that I used the word *managing*, since in many areas where *Phytophthora* is widespread today, eradication of the fungus is impossible or impractical. For the moment, we will be wise to learn how to live with this fungus when it is present while trying to prevent its spread to noninfected areas.

The Fungus and the Disease

Phytophthora cinnamomi Rands was first reported only as a parasite of cinnamon trees in Sumatra (Rands, 1922; hence the name "cinnamon root rot"), but is now known to attack over 950 varieties and species of plants around the world, mostly in tropical to warmer temperate areas (Zentmyer, 1980). This fungus probably originated in the ancient tropical areas which now include Malaysia and northeastern Australia.

Phytophthora belongs to a relatively primitive group of water-loving fungi, hence the frequent association of its root rot diseases with overwatering or poorly drained situations. One of the reasons this fungus prospers in wet

conditions is because it forms swimming spores, called zoospores, that propel themselves in the soil water to susceptible roots or from plant to plant. During suitable wet periods, thousands of zoospores can be released in a single growing container or area in the ground and can attack many roots and many locations on individual roots. The fungus also forms thick-walled "resting" spores that assist in its survival and persistence outside the plant — even under dry conditions for periods of two years or more. When the fungus is present in an area, its populations in roots and as soilborne or potting-mix-born spores usually increase, thereby magnifying the incidence or threat of disease. Spores can be washed into and can infest soil beneath container-grown plants, and can later serve to reinfest new or old stock.

Once it attacks a plant, the fungus forms microscopic threads (hyphae) that ramify through and bring about a soft rot of the roots. The rot and death of roots starts in the young feeder roots but can progress to older roots, eventually killing the entire root system. Under some conditions, camellias may regenerate roots only to have them destroyed in turn. As the root system is destroyed, the uptake and assimilation of water and nutrients by the plant are greatly thwarted. Damage to the root system may cause marginal firing of leaves as might happen in overfeeding or water stress, or may cause symptoms associated with mineral deficiencies (Stoner, unpublished). In early stages the plant declines in vigor and may show some tip dieback, delayed flower bud root rot proceeds actively during cooler, wetter, less stressful periods when symptoms of water deprivation are not as likely to appear; then, when warm weather suddenly ensues, the root system fails to meet the plant's urgent demands for water, and death occurs.

P. cinnamomi has strains with different abilities for attacking certain plants. Studies to date (Zentmyer and Guillemet, 1981; Meechan and Stoner, unpublished) indicate that only the so-called A^1 mate among California isolates is able to cause disease in camellia. The A^1 type can attack avocado trees *(Persea americana)* and other plants; but the more common A^2 type found frequently on avocado and many other hosts worldwide may not attack camellia. This situation has prompted some avocado growers and advisors to be wary of infected camellias as a possible threat to their crops. Such concerns affect the way they and others may look upon the camellia plants produced for sale by many nurseries.

The fungus is spread from one area to another by the movement of soil, water, or plants. In some areas it is difficult to find plants that are free of *Phytophthora*. Therefore, exclusion of the fungus is difficult, and we must consequently focus great attention on protecting and strengthening the camellias and discouraging the fungus in any way we can. To achieve these goals, it is helpful to think about how the fungus behaves; what conditions it prefers and benefits from; where it resides in growing areas; how it survives; how it is moved from place to place; and the kinds of camellias it most readily attacks and propagates on.

Chemical Control Alternatives

Phytophthora attacks the roots of camellias. Therefore we need a chemical control material that is economical, effective against this fungus at relatively low concentrations, suitable for use as a drench in soil or planting mixes, and that has lasting ("residual") effects even under the potential leaching effect of frequent watering. These requirements eliminate most if not all of the older, established chemicals. Some relatively recently developed chemicals, which tend to be rather specific in their action spectrum (organisms they affect), either are ineffective against *Phytophthora* (e.g., benomyl or Benlate) or of limited values in residual or potency categories (e.g., ethazole).

Metalaxyl, known in the trade as Subdue (or Ridomil) has shown much

promise for use against *Phytophthora*. The Subdue formulation is intended primarily for drench applications and other root/mix treatments in the control of ornamental plant diseases.

My experimental studies have indicated the strong effectiveness of Subdue in controlling *Phytophthora* root rot in container-grown camellias. *I deliberately specify root rot control because the chemical does not eliminate the fungus.* This throws a special light on our interpretation of its effectiveness and its best application.

I tested the active ingredients of Subdue (then known as experimental material CGA-48988) on camellia plants in a wholesale nursery situation to evaluate its effectiveness in the control of root rot caused by *Phytophthora*. The compound was applied mostly to seedlings in four-inch pots (0.15 pint/pot) and grafted plants in gallon cans (0.4 pint/can). The compound was applied in water at the recommended rate (for the 48988 formulation; check the Subdue label for current recommendations) of 1 ounce active ingredient per 100 gallons of water. For "control" comparisons, other similar plants in the same areas were treated only with water. All treated plants were kept on soil beds known to be infested with *Phytophthora* (pots in lathhouse; cans in open field areas). Many plants, particularly the four-inch pots and grafted plants in gallon cans were already infected and showed root rot. Conditions during the treatment were considered typical for an affected nursery operation. Over 500 plants were treated.

Plants were examined up to five months after treatment. A rating scale was used to evaluate the condition of plants: 0 = dead at end of five months; 1 = alive but stunted or graft failure; 2 = alive, moderately vigorous, acceptable for sale; and 3 = alive, very vigorous, excellent appearance. Vigor was based on bud activity and evident growth, timely shoot growth, fully developed leaves, good and numerous flower buds (in larger plants), and lack of evident disease symptoms.

Among the grafted, gallon-size stock, the 48988 (Subdue compound) proved most effective: 90% of the plants were judged saleable (2 & 3 ratings) five months after treatment, as opposed to 80% in the control. Five months after treatment, 76% of the 48988-treated plants received a 3 (vigorous) rating, whereas only 54% of the controls were so judged.

In the potted seedlings, held in a crowded area with intense disease pressure (very high fungus population, high moisture conditions, and weathered mix), 93% of the 48988-treated plants were in saleable or useable condition (2 & 3 ratings) five months after treatment, as opposed to 53% in the control lot — a very pronounced difference. Plants still rated as vigorous five months after treatment accounted for 77% in the 48988 lot and only 9% in the control lot.

Control was in no case complete, but was impressive under the given conditions. It must be noted that some root rot and the presence of *Phytophthora* were observed in the 48988-treated plants as well as in the controls. About 10% of the plants in the 48988-treated pots had conspicuously rotted roots. This points to the fact that CGA-48988 (Metalaxyl or Subdue) is not an effective eradicant; but the chemical does decrease diseased incidence and impact. While its beneficial effects may create a very healthy-appearing group of plants, it is very possible that *Phytophthora* is still present and waiting for a chance. Similarly, it is therefore possible for nurseries using Subdue or comparable compounds to produce apparently healthy, symptomless carriers of *Phytophthora*. This is not all bad. For many years, some growers have been selling untreated and reasonably healthy-appearing plants that carry *Phytophthora*; the fungus is widespread. The possibility of distributing treated plants that may be symptomless carriers indicates in part that we have not yet achieved the total level of control desired or, in other words — chemicals alone are not the complete answer.

My treatment with 48988 did appear to at least hold existing infections, and it is possible there may have been some curative effects; however, as noted elsewhere in this article, use of Subdue as a therepeutant on badly infected plants is a mistake and is not recommended.

The 48988-treated plants were superior to controls consistently in having larger leaves; in holding their leaves; having healthy roots; in forming strong flower buds; and in having more extensive root systems that extended at least ¾ of the way to the bottoms of containers. There appeared to be a possible tendency toward larger roots in the 48988-treated plants.

The long-term effectiveness and value of Subdue remains to be evaluated. So far it has shown outstanding potency at low concentrations; long residual effects (up to 3-5 months in trials), and strong overall effectiveness in preventing or minimizing disease. It should be noted, however, that in some crops other than camellias, Metalaxyl (the active ingredient of Subdue) has failed to control diseases after initial successes, usually because of the buildup of resistant strains of fungi. Such "breakdown" in effectiveness of the material is probably in most cases related to improper usage of the chemical over and over again by itself.

This means that if we are to use Subdue to good advantage and expect it to work dependably in the long run, we must employ it properly in our control programs. Using Subdue as a case in point, we can examine approaches to the most effective use of a modern, group-specific fungicide such as this one. Before discussing applications and methods, we should review characteristics of the product.

The active ingredient is quite specific in its activity against fungi. It is effective only against *Phytophthora* and its allies such as *Pythium* and the downy mildews. The chemical affects only certain stages or developmental phases of the fungus or its infection process, and it may interact in some way with the plant's physiology to limit disease development (Staub and Young, 1980). Although it inhibits the germination of resting spores of the fungus, it is *not* an eradicating agent that kills all spores outright. Furthermore, the chemical is most effective at relatively low concentrations when it is absorbed into the plant, as opposed to being free in the soil.

Two advisory ideas therefore emerge: (1) this chemical should not be used as a bare soil treatment as would be done with a true eradicating agent, and (2) it should be applied to living plants in place in the ground or containers for most effective action at low concentrations. In camellias, it should be drenched into the root ball area.

Many people have recommended the use of Subdue on already sick plants, quoting glowing testimonials of recovery. Such recovery has been noted, and such treatments might have certain valid, limited applications; but general use of Subdue as a therapeutic or curative agent is a serious threat to the chemical's long-term effectiveness and value. Why? First, consider that in an infested container mix or soil and in/on the roots of infected plants there may be mixed populations of *Phytophthora* individuals with different hereditary backgrounds and potentials. In the realm of a nursery or garden, some of these individuals just might carry genes that confer resistance ("immunity") to Subdue. The bigger the populations of *Phytophthora,* the more chance that a few Subdue-resistant strains might be present — sort of "waiting in the wings to make their appearance!" The mixes and root zones of infected plants can be expected to have much bigger populations of *Phytophthora* than new mixes or healthy plants newly exposed to the fungus. Therefore, if we persist in applying Subdue indiscriminately to such diseased systems with large fungus populations, we are, in effect, killing off or limiting the Subdue-sensitive strains while, at the same time, challenging and encouraging the resistant individ-

uals (previously in the minority) to propagate freely with less competition and to become common. If we continue to use Subdue alone and regularly in such a situation, the chemical-resistant strains may develop large populations and spread about the entire growing area, infecting new plants. As these strains increase, root rot reappears as a major problem and the effectiveness of Subdue is lost. Conceivably, in just two or three years the compound could become totally useless!

This leads us to another major point: Subdue should be used usually as a preventative or protectant in newly transplanted or reasonably healthy stock, not as a curative agent. Proper use should minimize the increase of troublesome resistant strains.

Regardless of use, however, we can probably expect Subdue-resistant strains to appear and to spread and become more common. As plants change hands, even conscientious users of the chemical will probably receive these strains. To prevent or slow this process or to minimize its impact, we should integrate the use of Subdue or similar chemicals with cultural controls and consider the co-application of our chief chemical with a secondary, broad-spectrum compound to "catch" those fungal strains that might elude the major control material. Such co-application or dual fungicide use in now in effect in some crops other than camellia.

In summary, observe the following when using an organic, group-specific product such as Subdue:

1. Follow label instructions and restrictions, using recommended dosages and intervals of treatment.
2. Do not use on bare, unplanted mix or soil unless specified on label.
3. Avoid usage on already sick plants or, if you must do this (e.g., to save a rare or special plant), keep these plants away from others and consider the possibility of co-application with another fungicide to thwart resistant strain buildup.
4. For general usage consider the co-application of the fungicide with another product; consult local advisors and check the label for compatibilities and recommendations.
5. Apply as a soil drench around living plants.
6. Preferably treat plants in a protective or preventative manner when first planted, received, or transplanted.
7. Avoid routine applications between transplantings that are more frequent than recommended on the label.
8. Populations of *Phytophthora* can increase with time if left unchecked. This fact may justify periodic treatments of older stock held for sale in nurseries or for enjoyment in the home garden. If such plants show evidence of progressing root rot, consider discarding them or barerooting, planting and treating them (see Cultural Controls).
9. Design an integrated program of control with chemical usage teamed with sanitary and other cultural practices.

We should address very directly and honestly the goal of producing disease-free plants and plants that are not symptomless carriers of *Phytophthora.* Misuse of control chemicals such as Subdue could produce healthy-looking plants that still carry the fungus. Truly integrated control programs permit highly effective use of fungicides while taking advantage of additional safeguards and thereby bring us closer to producing truly healthy, fungus-free plants.

Cultural Practices for Integrated Control

The use of cultural disease control measures should be viewed as being at least as important as any chemical measure. Indeed, they may in the long term be more important to sustained, profitable production of plants. Cul-

tural procedures strengthen the plant, disfavor the disease-causing agent, and minimize disease-supporting conditions. Cultural measures invoke many different beneficial factors or effects that act in concert to promote plant health. Indeed, if cultural measures are fully observed, it is possible that even in the presence of *Phytophthora,* disease levels might be maintained at an acceptably or practically low level. Combined with the *proper* use of an effective chemical, integrated cultural controls constitute a very potent protective force. Preventative and protective forces are less expensive in the long run.

The following cultural measures are highly recommended for use wherever practicable.

1. Plant in well drained and aerated planting mixes that hold up well and have a minimal tendency to settle, stratify, and compact over time. In dry climates, use bark chips or other mulches as necessary to retain moisture in mixes.
2. Use good-quality organic mix components such as peat to prevent quick breakdown, stratification, compaction, and waterlogging. Use perlite or other suitable, durable materials to lighten and help aerate mixes.
3. Do not re-use mixes or mix components; they could contain spores of *Phytophthora.* Store unused soil or mix components off the ground and clear of dumps or other areas where work activities might bring used and new mixes in contact.
4. Keep containers elevated off soil in holding areas. Soil may be infested with spores from earlier activity. Also, elevation tends to discourage movement of soil animals, some of which carry *Phytophthora* spores, into containers.
5. Graft scions onto resistant or tolerant rootstocks such as *Camellia sasanqua* to minimize propagations of the fungus and to give plants a healthier root system.
6. Do not shift plants to oversized containers, and don't plant in overly deep containers. Roots serve to balance the water economy in a container system. If large areas of unused (non-root occupied) mix persists for too long in a container, it could become compacted and overly wet and supportive of the fungus and root rot.
7. Keep old and/or diseased stock separate (at least out of splash zone) from healthy or new stock. Especially keep rooting cuttings and seedlings well elevated and separated from older plants.
8. Clean holding area surfaces such as benches between use; consider periodic treatment with a copper fungicide or a copper-based, suitable, nonphytotoxic wood treatment compound. Follow the label directions carefully.
9. Control snails and slugs.
10. Discard plants already seriously damaged by root rot; remember to discard also the infested planting mix. Thoroughly clean and disinfect containers before reuse. Remember that old infected plants increase the resident population of *Phytophthora* and thereby support the increased spread and incidence of the disease.
11. If an old, sick plant must be kept, bareroot it at an appropriate time; trim off the diseased portions of the root system and shape and reduce the top of the plant; discard the old mix; replant in a clean container with new mix; give the plant a protective drench with a suitable fungicide (Subdue has shown suitability for this kind of application; check the label for uses and directions); and keep the plant in a low-stress area until reestablishment. Take care not

to overpot, since the root system will be limited (see Point 6, above).

12. Organize plants for efficient watering and design your care program to ensure proper watering and minimization of stress. Moisture stress weakens plants and increases susceptibility or proneness to root rot.
13. Insist on strict sanitary conditions and concentrated control measures in propagation and in the early liner or pot stages. in the field, plants in many areas will eventually be exposed to *Phytophthora*. Delay of this exposure for as long as possible is beneficial.
14. Inspect plant material (top and roots) before you buy it or bring it into your garden or nursery. Some people bareroot and replant (see Point 11, above) all additions to their collections. Nurserymen usually cannot do this, and in their case, protective chemical drenches (check with source nursery for previous treatment record to avoid overdoses or complications) may be in order upon receipt of stock. Employ all appropriate integrated controls. Where possible, keep "imported" stock away from your clean plants, especially your propagation areas.

In the future we may be able to employ yet another potent force for disease management: biological control. The nurturing and/or addition to soils of microorganisms antagonistic to *Phytophthora* and its disease-causing activities may bring about an effective, inexpensive control of disease! Before biological controls can be used, however, more research on antagonistic organisms and phenomena will be needed; we will have to learn how to best deploy and manage or nurture antagonists in soils or container mixes; and we must learn how to integrate biological, cultural, and chemical controls. By all indications, however, biological control agents do exist and are well within our grasp. We can look forward to significant developments in this area in years to come. When you think about it, the use of resistant or tolerant rootstocks is a type of biological control already in use.

Next time you set out to combat *Phytophthora* in your garden or nursery, do a more effective, thorough, and lasting job — employ the principles of integrated crop and disease management.

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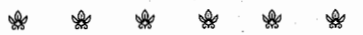

Oversize beach towels make excellent summer "bedspreads." On cool nights, they can double as extra blankets and are much easier to launder.

An old pillowcase makes a wonderfully washable garment cover. Simply cut and buttonhole stitch an opening to accommodate the hanger hook. When dusty, just toss the cover into the washer for a spin in hot suds.

Old nylon stockings make splendidly washable stuffing for dolls, animals, and pillows. Wash the hosiery by machine in a mesh bag; when dry, put aside for your own or a friend's handiwork.

THE AGONIZING REAPPRAISAL

by Bill Donnan

You know the old story. It's happening with increasing frequency these days. The kids have all, long since, gotten married and had children of their own. Grandma and Grandpa are in their late 60s. They no longer want or need the excessive care of a large home and yard. They sell out and buy a condominium. Well, what happens to a camellia hobbyist when he sells his home and moves into a condominium? Our experience might not be typical, but it might give some of you people who are thinking of making the change some idea on how to cope.

Ours was no "spur of the moment" idea. We had seen this particular condo unit several years prior to buying it. Then when it came on the market again, we purchased it on a six-month escrow. Thus we had some time to "gear up" for the change. Our new condo has a 50 foot by 15 foot patio. Room for about twenty camellias in containers. My toughest job was to pick and choose among over 300 plants in my collection. Some of my favorites were huge specimen plants growing in the ground. They were too large to dig out so I purchased new ones and put them in ceramic tubs. Some of my favorites were already growing in the large ceramic tubs and they were easily moved onto the patio. Several of my favorites were growing in the ground but were small enough for me to dig out and place into containers. Here is what I ended up with on the patio of the condominium: 'Nuccio's Ruby'; 'Nuccio's Pearl'; 'Nuccio's Jewell'; 'Fimbriata'; 'Commander Mulroy'; 'Margaret Davis'; 'E.G. Waterhouse Var.'; 'Twilight'; 'Garden Glory'; 'Adolphe Audduson Special'; 'Grand Prix'; 'Daikagura'; 'Jean Clere'; 'Elisabeth Weaver'; 'Arcadia'; 'Hody Wilson'; 'Ave Maria'; 'Suchuka'; 'Bow Bells'; and 'Yuletide'. Please note that they are NOT ALL FORMAL DOUBLES!

You can imagine my sorrow at having to say "goodbye" to a twenty-foot-high 'Buddah' which had won me a lot of hardware at the shows! I said; "So Long" to three super 'Grand Slams' and to 'Alice Wood' (my first successful graft and now with a four-inch diameter trunk!). "So Long" to 'K.O. Hester'; 'E.G. Waterhouse'; 'Purity'; 'Hit Parade'; 'Debutante'; 'Finlandia'; 'Glen-40'; and 'Kramer's Supreme', all of which were over 8 feet high! Oh well! The move had its compensations. I didn't have to battle the crab grass, the leaves, the outside painting, the lawn mowing, the flea beetles, and the tree trimming. Furthermore, I was elected to the Gardening Committee of the condominium. Thus, I immediately set about to transform the outside ground landscaping into something with some camellias in the planting. When I arrived on the committee the condo complex had only two camellias among hundreds of other shrubs and trees. We now have over 25 camellias thriving on the property.

Some of these were given to me; some were won at raffles; some I have purchased. To name several, they are: 'Nuccio's Gem'; 'Glen 40 var.'; 'Tom Thumb'; 'Little Suzy' (a cutting I got from Jim McCoy); 'Betty's Beauty'; 'Kothojimi'; 'Misty Moon'; 'Eago'; 'Asakura'; 'Enishi'; 'Namban Koh'; 'Tiffany'; 'Little Bo Peep'; 'Moonlight Bay'; 'Ville De Nantes'; 'Ed Combatalade'; 'South Lake White'; 'Betty Ridley'; and 'Pink Perfection'. (I can't think of them all!) Besides this, I have planted some twenty azaleas, eight of which are Satsukies, and about 60 impatiens. The beauty of all this is that the regular contract gardeners for the condo do all of the watering, feed-

ing, weeding, raking, pruning, etc., and all I do is plant and putter around.

What happened to the rest of my camellia collection? All those plants growing in the ground stayed with the house. (I replaced the four plants which I had dug up with some of my container grown plants.) Most of my other container plants were moved out to my children's homes. One of my sons took 50 plants and we planted them in his large yard. I still give those some tender loving care when we are out that way. I gave away about 25 plants in the one-gallon cans to the different camellia societies for their raffles.

How do I keep busy having been an avid gardener for the past 30 years? Well, there is this Condo Gardening Committee, but that does not satisfy my yen to get my fingernails dirty. I spend one morning each week at the Huntington Botanical Gardens doing volunteer work at the Greenhouses. This is a real joy since I can re-pot to my heart's content. Then, last but not least, I have a vegetable garden and berry patch on some waste ground at the Nuccio's Nurseries. This gives me an excuse to go up there at least once a week to water and weed the vegetable patch and admire my berry bushes, try to catch the gophers, and shoot the breeze with some of the other "Old Codgers" hanging around the nursery. Once in a while we break out a bottle of wine and argue the relative merits and demerits of C. Chrysantha and the new Yunnan retics. So you see, if you play your card right you can have the "Best of Both Worlds." No real chores which HAVE TO BE DONE and yet a most perfect and satisfying regime as a condominium camellia hobbyist!

AZALEAS IN THE LANDSCAPE

by Julius Nuccio

No other flowering shrub has contributed more to the gardens of America than the azalea when one considers that by proper selection of varieties, color in the garden can be had from October through June. Azaleas can be handled as pot plants, mass plantings, specimens, tree types, espalier and hedges. The versatility of this plant is unlimited. However, most azaleas are at their best when planted in groups or drifts. An ideal situation for them would be among high trees so spaced as to allow the sun and light to penetrate, yet providing intervals of shade to give the plants some respite from the hot sun. Where there are not trees, the north or east side of the house or high fence would be desirable. It is true that many azaleas thrive in full sun, especially along the coastal areas, but the Southern Indicas are best suited for full sun plantings.

CULTURE - SOIL — Azaleas may be grown successfully in various acid soil mixtures, such as leaf mold (redwood pine and oak), sand and light loam, but for best results, pure peat moss or ⅔ peat and ⅓ soil plantings have proven best. The hole need not be over 15" deep and 18 to 24" in diameter. Do not set the plant lower or higher than it was originally growing. Always soak peat moss thoroughly before using. Fill around ball of plant firmly and make certain that good drainage is maintained.

WATERING — Azaleas, much like camellias, should be moist at all times, but caution should be taken against their being WET at all times. Water well and deeply, but only as often as your own weather conditions demand. In areas such as Southern California where summer months are dry and arid, one may generally expect to water once a week. Spraying of the foliage in the late afternoon of hot days is very beneficial.

FERTILIZING — Azaleas are basi-

cally light feeders and caution should be taken never to overfeed. Three to four feedings spaced from March through September (6 to 8 weeks) is sufficient. Cottonseed meal or a commercial camellia-azalea food should be used. In Southern California use a tablespoon for each feeding of a plant which is about one foot high and one foot across. The labels on your fertilizer will generally advise you to cut the amounts in half for plants in containers. Never fertilize an azalea when leaves show a yellow or paleness between the veins. This is usually caused by lack of available iron and will most often respond to application of iron of the many new chelated irons. Continue the use of iron instead of fertilizer until foliage becomes green. The annual use of NUCCIO's Stabilized Iron is recommended.

PRUNING — Heavy pruning of undesirable branches should be done when they are at their peak of bloom and used as cut flowers. Most varieties require one good pinching or pruning of new spring growth in July, thus creating more branches and bushiness for fall bud-setting. However, when plants are young and vigorous, such as the Southern Indicas, pruning on new growth should continue through September.

PEST CONTROL — Azaleas are comparatively free of insects and disease, but for good healthy, pest-free plants, a precautionary spraying in late spring (after blooming) and fall of Malathion or Kelthane can eliminate the danger of thrips and mites.

Have You Paid Your 1984-85 Dues?

Membership Dues $15 — Magazine Subscription $10

THE RETICULATA HYBRID PROBLEM

by Bill Donnan & Bill Woodroof

Several articles have been written about the problem of the proliferation of the number of cultivars of C. reticulata hybrid. (See "The Reticulata Hybrid Revolution" by W.E. Woodroof; Vol. 43, No. 2, Pg 16 - Nov-Dec 1982 CAMELLIA REVIEW.) The discussions by camellia hobbyists revolve around the fact that too many ordinary "run-of-the-mill" type cultivars are being registered. Too many "look-alikes" are being given names. Too many of those registered have the same pink color and the same floppy petals. Too many, quite frankly, are not worthy of registration and should not be listed in CAMELLIA NOMENCLATURE. One may well ask the question: "How serious is the problem?" Let me assure you that the problem is serious and from the looks of what is happening it is going to get worse!

A detailed study of the listing of the species Reticulata and Hybrids with Reticulata parentage in the 1984 CAMELLIA NOMENCLATURE is quite revealing. The listing comprises over 480 separate cultivars and it is the most rapidly expanding list in the book. By contrast, the 1981 Edition contained only 326 cultivars. Thus there were 164 new names added to the listing in three years. Laying aside the fact that 48 of these were the "new" Yunnan reticulatas which were imported to the University of California Botanical Gardens and given English translated names, this still leaves 116 new cultivars which were named and registered between 1981 and 1984. This means that, on average, there were about 40 new reticulata seedings registered each of the last three years! If the blooms from these 116 new cultivars were placed on a show bench, not more than 10 percent of them could be identified by a panel of the most knowledgeable judges!

Herewith is a listing of the number of reticulata hybrid cultivars registered by year of introduction — taken from the 1984 Edition of CAMELLIA NOMENCLATURE:

1820 — 1 ('Captain Rawes' - China to England)
1832 — 1 ('Wild Form' - Seedling - G. Forset)
1836 — 1 ('Salutation' - Salunensus × 'Captain Rawes')
1857 — 1 ('Pagoda' - China to England)
1948 — 1 (Yunnan Reticulatas - China to Ralph Peer and Descanso)
1954 — 1
1955 — 2
1958 — 6
1960 — 4
1961 — 5
1962 — 2
1963 — 4
1964 — 5
1965 — 6
1966 — 5
1967 — 12
1968 — 15
1969 — 8
1970 — 21
1971 — 23
1972 — 23
1973 — 16
1974 — 14
1975 — 25
1976 — 16
1977 — 23
1978 — 6
1979 — 21
1980 — 88 (48 Yunnan retics)
1981 — 38
1982 — 42
1983 — 31 (cut-off on June 15th)

A glance at these statistics will point out just how serious the problem has become. Does anyone believe that there were 116 reticulata cultivars developed in the last three years which were worthy of registration? The time has long passed us by when any and every retic seedling which blooms merits a name and registration. In 1836, when the first cross was made to produce 'Salutation' it was an event wor-

thy of note. When Howard Asper developed "The Girls"; 'Dream Girl', 'Flower Girl', and 'Show Girl' it was a sensation. Now everyone is planting a few reticulata seeds and when the seedlings bloom they are given names. Even the more dedicated hybridizers who carefully control the crosses that are made tend to name cultivars which do not differ markedly from the parent blooms. On the other hand, some nurseries and growers practice careful and prudent deliberations before naming and registering a new hybrid. For example over 50 seedlings were rejected before 'Dr. Clifford Parks' was named and registered. Nuccio's Nurseries "decapitates" 500 reticulata seedlings every year for understock. They carefully pick out 10 or more seedlings and test them for 4 or 5 years and then they may introduce one new hybrid each year.

It is neither the duty nor the prerogative of the Camellia Nomenclature Research Committee to reject any valid registration. That body can only accept and include registrations which have been submitted for consideration. However, in trying to bring some order out of the chaos which has developed, here are some suggested "ground rules" which every hobbyist might wish to consider in making an appraisal of new reticulata seedlings. Starting with the premise that all camellia blooms are beautiful, we suggest that the grower ask himself these four questions in judging the worthiness of the new seedling to be registered.

(1) Is the seedling inferior as compared to the other 480 cultivars now registered?

(2) Is the seedling fair, but too similar to, and not as good or better in all respects to previously named and registered varieties?

(3) Is the seedling good, similar to but better in some respects, such as plant growth, foliage, texture of petals, etc., to a previously named and registered variety?

(4) Is the seedling excellent, being different in color, size, shape of petals, or form and definitely adding to the pantheon of existing varieties?

Only those cultivars which meet one of the last two criteria should be considered for naming and registration. Even then, if a cultivar meets criteria Number 3 or 4, it should be tested and placed under a prolonged period of observation to find out whether the scions will "hold" the same attributes seen in the original plant.

The hobbyist or grower will find it difficult to believe that his or her "pet" new seedling is not worth seeing the light of day. Also, most amateur growers do not have the opportunity or exposure to the vast number of cultivars now listed. Thus they cannot make an unbiased opinion about their new seedling. In closing let us quote an old cliche which no doubt will govern most amateur growers when it comes time to choose whether to cut the seedling off, or name it and register it. "BEAUTY IS IN THE EYE OF THE BEHOLDER" and there is nothing more beautiful (in the eye of the grower) than a new reticulata hybrid seedling bloom.

HUMIDITY AND HORMONES FOR CUT BLOOMS

by Frank F. Reed

Editor's Note: *We have had a number of requests to reprint this article which appeared in the October, 1970 issue of the Camellia Review. We have edited it slightly.*

Camellia blooms respond well to "preharvest" (approximately ten minutes before cutting) treatment with 6-Benzyl-amino-purine[2] (Benzyl Adenine); treating the blooms after cutting with Naphthalene-Acetic-Acid[3] (NAA); and then storing for days and *weeks* in saturated water atmosphere at room temperature (77°F) as well as at lower temperatures will assure fresh blooms.

The Shell Development Laboratory (Van Overbeek, et al) at Modesto, California has done outstanding work in increasing the life of leafy vegetables such as lettuce, Brussels sprouts, broccoli, celery, etc., by applying 6-Benzyl-Adenine (their SD 4901) as a pre-harvest spray and a post-harvest dip or wash. The SD 4901 reverses the aging of vegetables and blooms by providing adenine to restore the Soluble Ribonucleic Acid (S-RNA) molecule. The S-RNA then maintains the protein synthesis which keeps the vegetable fresh and green. The same reaction apparently applies to Camellia and other blooms.

Bonner and Honda did fine work for our Camellia Society in 1950 to prove the efficacy of NAA post harvest treatment (good for two weeks) and equal efficiency of the 100% relative humidity at 77° F which added another two weeks to the life of cut blooms. The NAA sprayed near the floral axis stregthens the bonds between the petals and the leaves with the stem. The high humidity causes the bloom to maintain its turgidity and fresh appearance.

Preharvest Procedure

We have sprayed our blooms about ten minutes before cutting with a 100 ppm (parts per million) aqueous solution of 6-Benzyl-Amino-Purine. A few drops are sprayed into the floral axis of each bloom to be cut. Avoid getting the stamens wet if possible. Robert Dorn of the Modesto Camellia Society and the Shell Development Lab uses 100 ppm on his Camellias. The lab tests have used dosages in range from 25 to 200 ppm on other flowers. They point out that a solution applied 24 hours before harvesting a leafy vegetable has no effect on its keeping quality and the same rule should apply to blooms. As stated above, the interval between treatment and cutting should be approximately ten minutes, probably no more than thirty minutes.

Dr. G. Shaw of Bradford Tech says that other Kinins such as Kinetin, Verdan and Zeatin are very efficient in prolonging the life of cut flowers and he reports the use of concentrations as low as 10 ppm.

Mixing of Benzyl-Amino-Purine

In a 3 fluid ounce bottle mix 2 fl. oz. of ethanol (obtainable at a drug store) with 250 mgs. of Benzyl-amino-purine. This is practically a 0.5% solution. Use a brown bottle and normally store in a dark place. Before any spraying is done, mix one tablespoon of this solution with 3 cups of tap water in a quart bottle. Keep this bottle in a dark place. You can fill your windex spray bottle from this quart bottle which is practically 100 ppm Benzyl-amino-purine solution. Show no favorites and keep your windex bottle in the dark when not in use.

Post Harvest Treatment

A 250 ppm aqueous solution of NAA[3] can be made by mixing approximately 200 milligrams of the NAA powder in a quart of hot tap water. 200 mg. NAA is about the size of a pencil eraser or would about fill a quarter-inch size capsule.

No special storage provisions are

necessary for either the dry powder or the aqueous solution. The exact proportions are not necessary. The purpose of the NAA is to strengthen the bonds between the petals and the stem and to delay the petals dropping off (abscission).

With a windex bottle you can spray NAA solution down into the axis of the flower. Generally, I have directed squirts from 3 to 5 directions always avoiding hitting the stamen. The total liquid will be approximately 5 drops.

High Humidity

We customarily use a clear plastic lingerie box, 15 × 13 × 5 inches in size, for storing, carrying and shipping camellias. A damp paper towel is placed on the bottom of the box. Next, about a two-inch layer of dry chopped waxed fiber is put in. For each bloom there should be a small cup such as a milk bottle top, which holds a cotton wad soaked with the NAA solution. The stem of the bloom rests on this wad. The sales pitch on mixing and use of the NAA has been published a few times[1], but has been repeated above.

The morning temperature in Southern California in Camellia season is probably around 55°F and the relative humidity may be approximately 60%. The expert at your air conditioner store will tell you that when this air is lowered to the 40s F, you will get approximately 100% humidity without any added moisture in the air. However, you have plenty of water available in your container even without spraying the chopped fiber. Usually there is "no sweat" in getting sweat on the inside of your box within an hour or two at 41°F. This indicates 100% humidity and saturated atmosphere. Our purpose in lowering the temperature in the containers is to obtain the essential high relative humidity.

Floyr Honn, who has had long experience with the cut Camellia trade, has kept Camellias 2 or 3 weeks at ambient temperature but with high humidity. His experience agrees with the work of Bonner and Honda noted in the 4th paragraph of this article.

You should be warned against refrigerating your blooms down to the low 30s. Under certain high humidity conditions, frost can be formed even though the reported ambient temperature is above 32°F. This happens occasionally in the Los Angeles basin and with official temperatures reported as high as 35°F.

Dividends

Several of us have been able to pick our flowers at their peak and have some ready as much as 10 or more days ahead of competition. I have competed in four Potomac Valley shows and did as well with week-old blooms as I do in Southern California. I am convinced that the blooms will get to their first stop in fine shape if they are in transparent boxes which are practically air tight and are sent by air freight.

1. Apr. 1968 Camellia Journal, "The Pony Express Rides Again"; 1967 ACS Yearbook P22; Nov. 1966 Camellia Review, "Increasing Life, etc." by Reed; and Nov. 1969 Camellia Journal P6.
2. Catalogue No. 200241, Calbiochem Corp., 3625 E. Medford, Los Angeles 90063, $7.50 for 250 mgm.
3. NAA Catalogue Number is 4773 with Calbiochem Corp. $2.50 for 25 grams (25,000 mgm).

SONOMA COUNTY CAMELLIA SOCIETY
Show Results — March 24 & 25, 1984

Sweepstakes		Robert Ehrhart
Sweepstakes Runner Up		Mr. & Mrs. Don Bergamini
Japonica Over 5½"	*'Miss Charleston Var'*	The Art Gonos Family
Japonica 4½" to 5½"	*'Margaret Davis'*	Mrs. William R. Breuner
Japonica 3½" to 4½"	*'Magnoliflora'*	The Art Gonos Family
Japonica 3s Over 4½"	*'Grand Slam'*	Mrs. William R. Breuner
Japonica 3s 3½" to 4½"	*'Ragland Supreme'*	The Harlan Smith Family
Japonica 5 of a Variety	*'Mrs. D. W. Davis'*	The Art Gonos Family
Japonica 9 Different Varieties		Mrs. Barbara Breuner
Boutonniere Under 2½"	*'Little Slam Var'*	Mr & Mrs. Donald D. Lesmeister
Boutonniere 2½" to 3½"	*'Shuchuka'*	Mr. & Mrs. James Randall
Boutonniere 3s Under 2½"	*'Pink Perfection'*	Mr. & Mrs. George W. Zurilgen
Best of Show	*'Miss Charleston Var'*	The Art Gonos Family
Reticulata Hybrid Over 4½"	*'Aztec'*	The Art Gonos Family
Reticulata Hybrid Under 5½"	*'Black Lace'*	Virginia Rankin
Reticulata Hybrid 3 of Var.	*'Black Lace'*	Virginia Rankin
Reticulata Hybrid 5 different		The Art Gonos Family
Hybrid Over 4"	*'Julie Var'*	Mr. & Mrs. Don Bergamini
Hybrid Under 4"	*'Pink Dahlia'*	Bill Lockwood
Hybrid 3 of a Variety	*'E. G. Waterhouse Var'*	The Harlan Smith Family
Best Seedling		Mr. & Mrs. Jack Woo
Best Fragrant Seedling		Ken Hallstone
Three Blooms, Any Variety		Mrs. William R. Breuner
Youth Class	*'Black Tie'*	Jene Pitts
Sonoma Co. Cam. Soc. Members	*'Three Dreams'*	Jim & June Grant

SOIL TEST

Ed. Note:
Reprinted from
Golden Gardens

In running through the garden news,
I read some flower growers views,
And then decided it was best,
That I should have a soil test.
So, in my bed I stuck a spade,
To dig the test I wanted made,
I scooped a sample in a sack,
And wrapped it in a mailing pack.

Then to the lab I sat and wrote,
And asked them if they'd please denote,
How many properties they found,
Within the testing of my ground.
I waited for a month or more,
So long in fact, it made me sore,
And when their letter came at last,
Its contents left me all aghast.

"And kitchen stuff like onion rings,
And quite a lot of other things,
Like apple peel and tiny bones,
Plus shredded bark and piney cones.
Enclosed please find our little bill,

"And please remit—we know you will.
P. S. We hope your feelings won't be hurt,
But we cannot find one ounce of dirt."

Jim L. Wilkerson

CONTRIBUTORS TO THE CAMELLIA NOMENCLATURE ENDOWMENT FUND

Ernie Pieri in memory of Dorothy Pieri.
Ernie Pieri in memory of Delphine Krueger and Vera Koneff.
Ernie Pieri in honor of the 50th wedding anniversary of Mr. and Mrs. Robert Neely.
Paul and Edna McClelland in memory of Dorothy Pieri.
Warren and Rosario Dickson in memory of Dorothy Pieri.

The NOMENCLATURE ENDOWMENT FUND needs your continued support. Sales of the book and an allocation of the membership dues will continue to be added to the Fund on a quarterly basis. However, we still need the support of all interested hobbyists.

Have You Paid Your 1984-85 Dues?

Membership Dues $15 — Magazine Subscription $10

CAMELLIA LITERATURE FOR SALE

A Revision of the Genus Camellia-Sealy Published by R.H.S.	$40.00
American Camellia Society Yearbooks, 1950-70	5.00
Beautiful Camellias of Descanso Gardens 80 full-page color pictures, etc.	4.00
Bound copies 1981 Historical Edition Camellia Nomenclature	25.00
Paperback copies 1981 Camellia Nomenclature	12.00
Bound volumes Camellia Review 1954-1980	12.00
Unbound volumes Camellia Review 1954-1980	6.00

Contact: William W. Donnan
700 South Lake Ave #120, Pasadena, CA 91106

Directory of Other California Camellia Societies

CAMELLIA SOCIETY OF KERN COUNTY—President, Mel Canfield; Secretary-Treasurer, Nelson Prinz, 8300 Kern Canyon Rd., #148, Bakersfield 93306. Meetings: To be announced.

CAMELLIA SOCIETY OF ORANGE COUNTY—President, Walter Harmsen; Secretary, Mrs. Frances L. Butler, 1831 Windsor Lane, Santa Ana 92705. Meetings: 3rd Thursday, November through April, California Fed. S & L Bldg., 1802 N. Main, Santa Ana.

CAMELLIA SOCIETY OF SACRAMENTO—President, Peter van Hoecke; Secretary, Evalena Smith, 601 34th St., Sacramento, 95816. Meetings: 4th Wednesday each month, October through April except Nov./Dec. 3rd Wed., Shepard Garden & Arts Center, 3330 McKinley Blvd.

CENTRAL CALIFORNIA CAMELLIA SOCIETY—President, Mary Ann Ray; Secretary, Ruth Ann Lewis, 6440 Sequoia Dr., Fresno 93711. Meetings: 3rd Thursday, November through February in Smuggler's Inn Motel.

DELTA CAMELLIA SOCIETY—President, Don Bergamini; Secretary, Jack Lewis, 3824 Beechwood Dr., Concord 94520. Meetings: 2nd Tuesday, November through March, Oak Grove School, 2050 Minert Rd., Concord

LOS ANGELES CAMELLIA SOCIETY—President, James Connors; Secretary, Warren Dickson, 1935 Apex, Los Angeles 90039. Meetings: 1st Tuesday, December through April, Union Fed. S&L., 2450 Glendale Blvd. Los Angeles 90039.

MODESTO CAMELLIA SOCIETY—President, Harlan Smith; Secretary, Carolyn McKenney, 1014 Enslen Ave., Modesto 95350. Meetings: second Tuesday, October through May, 800 E. Morris Ave., Modesto.

NORTHERN CALIFORNIA CAMELLIA SOCIETY—President, James Toland; Secretary, Judith Toomajian, 18 Diablo Circle, Lafayette Ca. 94549. Meetings: first Monday, November through May. Chabot School 6686, Chabot Rd., Oakland.

PACIFIC CAMELLIA SOCIETY—President, Al Gamper; Secretary, Marcie Alltizer, 1253 Bruce Ave., Glendale, 91202. Meetings: 1st Thursday, November through April, Descanso Gardens Exhibit Bldg., 1418 Descanso Dr., La Canada

PENINSULA CAMELLIA SOCIETY—President, Ali Henley; Secretary, Diane Hicks, 1253 Sharon Rd., Menlo Park 94025. Meetings: 4th Tuesday, September through April, AMPEX Cafeteria, 401 Broadway, Redwood City.

POMONA VALLEY CAMELLIA SOCIETY—President, Ann Geerken; Secretary, Dorothy Christinson, 3751 Hoover St., Riverside 92504. Meetings: 2nd Thursday, November through April, Pomona First Fed. S & L Bldg., 399 N. Gary, Pomona.

SAN DIEGO CAMELLIA SOCIETY—President, John Nichols; Secretary, Janet Hatch, 427 Orange Ave., Apt. F, Coronado 92118. Meetings: 3rd Wednesday, October through April, Casa Del Prado Bldg., Balboa Park, San Diego.

SANTA CLARA COUNTY CAMELLIA SOCIETY—President, Robt. Marcy; Secretary, Donna Hardy, 349 Condon Ct., Santa Clara 95050. Meetings: 3rd Wednesday, September through April, Allstate Savings, 1304 Saratoga Ave., San Jose.

SONOMA COUNTY CAMELLIA SOCIETY—President, James Grant; Secretary, Mary Alice Merritt, 2563 Tacherah Dr., Santa Rosa 95405. Meetings: 3rd Friday, November through May, Santa Rosa Jr. College, AG Bldg., Santa Rosa.

SOUTH COAST CAMELLIA SOCIETY—President, Dr. Glenn Burroughs; Secretary, Mrs. Pauline Johnson, 1251 10th St., San Pedro 90731. Meetings: 3rd Tuesday, September through May, South Coast Botanical Gardens, 26300 Crenshaw, Palos Verdes.

TEMPLE CITY CAMELLIA SOCIETY—President, Marion Schmidt; Secretary, Mrs. Alice Jaacks, 5554 N. Burton Ave., San Gabriel, Ca 91776. Meetings: Friday, Nov. 16; Thurs., Jan. 24; Wed., Feb. 27; Thur., Mar. 28; Thurs., April 25. At Lecture Hall Arboretum, Arcadia, except 2/27 & 4/25 Ayres Hall.

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