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C. RETICULATA "BUDDHA"

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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 (Jan., Apr., July and Oct.) 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 Camellia Society of Santa Clara County, 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.

WHY BELONG TO A CAMELLIA SOCIETY?

If you were to take twenty members of a camellia society aside and ask each of them the above question you *might* get as many different answers—but I am willing to bet that more would say “to get the facts about camellias” than would name any other single reason. This reminds me of an experience I had a number of years ago.

In company of the fellow responsible for my own camellia addiction, we would meet regularly with another chap on other matters and, for some peculiar reason, inevitably the conversation would get around to our gardens and, of course, camellias. Although our mutual friend spent liberally on his garden, to which he was devoted, try as we would to interest him he always acted as if belonging to a camellia society was a luxury he could not afford. Then one day, what we failed to do after months of persuasion and entreaty was quickly accomplished by one stroke of ill luck—to our friend, that is. For some reason unknown to him or his gardener, a pet specimen camellia had suddenly died.

Now I regard myself as having a sympathetic nature and an interest in my fellow man but when we two camellia society members heard this doleful news, no tears flowed down our cheeks. After making a decent attempt at commiseration, we asked our friend what he figured his prize camellia was worth. And right here is where he made his second mistake, his first being too much sales resistance. “I wouldn’t have taken a hundred dollars for that camellia!” was the spontaneous and obviously honest answer of a wounded soul. With this invitation, it was but a moment’s work to correlate the value of the lost plant with camellia society dues at \$5 per year, besides the sentimental value and bother attached to replacement—and we had our man—a willing victim. This is not the figment of a fertile imagination—it actually happened.

Leaving all levity aside, I do not wish to imply that joining a camellia society is like maintaining life insurance—a matter of protection. It can be that, of course, but what a person gets out of a camellia society or a garden club should not be measured in dollars any more than happiness and things of the spirit should be. It is primarily a matter of having the fun and pleasure of associating with kindred souls, I guess. But, aside from providing congeniality and the social aspects in general, does it not follow that the greatest service a camellia society can render its members is just that—service? And, if our very first premise is correct, we must “get the facts”—all the facts as accurately as possible—if we are to do our job.

When it comes to such supplementary functions of the society as publications, then it would seem that this is even more emphasized. Here we must be more on the serious than the social side if we are to meet our obligation to give advice. At the same time, it should be kept uppermost in mind that we are an *amateur* organization, for amateurs, with all the high purpose and ethics—and the limitations, too—that this implies. While we should at all times co-operate with and endeavor to maintain a harmonious relationship with our friends, the professionals, and duly appreciate their skills and problems, in the final analysis our society, our organization, exists solely by reason of the support of those of whom it is composed, which we will continue to merit only so long as we recognize what our first obligation is.

Why this rather profound attempt at self-analysis? Well, we are leading up to a somewhat ambitious proposal. As you will have noted from our last issue, the American Camellia Society has, within the past year, taken a very significant step forward through formation of its Inter-Society Relations Committee, whose initial object is helping to further co-ordination of the activities of the local societies, both with each other and with the national organization. By doing so, standard rules and procedures, arising from the broadest possible exchange of views, can be worked out, thus avoiding the disadvantages and conflicts of a great amount of unrelated and duplicated effort. In addition, savings may be had through the use of standard forms and co-ordinated printing, for example. This is only the initial step, and a good one, but much more may be expected to develop out of the joint society meeting in New Orleans next January. All in all,

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AN APPRAISAL OF THE RETICULATA

March 15th of next year will constitute the tenth anniversary of the introduction into the western world of the then new reticulatas from Kunming, Yunnan Province, China, one of the more recent of which we reproduce on the front cover in commemoration thereof. This is BUDDHA, one of the two latest ones to reach our shores, and it is timely that we do so as this variety is now being advertised throughout this country as the 1958 choice of All-American Camellia Selections, Inc. on a "regional" basis. While we have been in the past and continue to be somewhat puzzled how one can harmonize the restrictive limitations which "regional" signifies with the universality which "All-America" implies, that should not prejudice anyone against the camellia concerned, provided, of course, he recognizes its limitations. By that we mean it can only be grown outdoors successfully where other reticulatas have proven satisfactory. As a greenhouse subject, BUDDHA should do well almost anywhere, we would imagine.

In fairness to the All-America organization, it must be said that publicity we have seen to date is completely frank in stating that there are definite geographical limitations in which this magnificent reticulata hybrid can be grown satisfactorily and, we might add, that is to say it is largely restricted to California and greenhouses. Thus the only complaint one might make is in the use of the designation "All-America" with respect to a camellia that might more properly be described as "All-California", but even this is stretching the point slightly. Nevertheless, to those who can grow it, this should detract nothing from its lustre. Make no mistake about it, 'BUDDHA' is one of the best of the reticulatas—a tremendous grower and having, besides a beautiful, vivid, appealing bloom, foliage of a distinctive light green—better than average for the species. However, it is not "lustrous" nor "glossy" as one would ordinarily use these terms in describing the foliage of a camellia. It seems to be a bit more bushy than some of the other reticulatas although it attains height very rapidly.

Perhaps ten years is not enough to pass final judgment on what will probably always be a somewhat controversial species. Actually, most of us have had considerably less experience with the "Yunnan group" than that, although the "Capt. Rawes" variety has been with us a long time. My own impression is that the reticulatas, as a class, must be regarded somewhat the same as novelties—a type of camellia with distinct limitations not only from the geographical but usage standpoint. As garden subjects perhaps their best spot will be in the background, where their inferior form and foliage will not stand out so prominently and full advantage may be taken of their tendency to height and more rapid growth than the japonica. Espaliered on a high wall or trellis might also be suitable, but as specimen potted plants even the best of them lack something. For one thing, they grow too fast and rangy, are too sparse as a rule and do not have a satisfactory overall effect. Out of bloom they are quite lacking in ornamental value. On a sheltered patio, their tops hit the ceiling within a year or two and they soon outgrow their situation. Strangely, they seem to do very well in relatively small containers.

We had a freak snowstorm here last February and one of my two plants of "PAGODA" (also known as Pine Cone—said to be the same as the Robert Fortune variety) which had been given a splendid situation in the ground under live oaks but slightly exposed to winds from the south, shed its buds and failed to develop a single flower although the other plant, in a container but more sheltered, bloomed quite normally and satisfactorily. (We were away at the time but the recording thermometer's lowest reading was 20°F.) This leads me to believe that it is more necessary to condition reticulatas to changes in their immediate environment—perhaps in another season this plant will perform just as well as the other. No bud drop was apparent on any of eight of the ten other varieties that bloomed.

If one may hazard a guess, it is that, insofar as all except the mildest of the camellia-growing regions is concerned, at least another generation, and probably two, of reticulata

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PROGRESS REPORT

Harold L. Paige, Lafayette, California (Chairman)

Committee on Plant Experimentation, No. Calif. Camellia Society

Since there seems to be considerable interest among camellia growers in the crossing of camellia species, it would appear worthwhile to publish anything new or helpful in this regard. Our Committee meets at rather long intervals, usually when the season is right for certain operations or when there are new developments to report. Such a meeting was held June 20th of this year when we were fortunate to have as our guest the noted plant geneticist, Dr. Walter E. Lammerts. Dr. Lammerts has produced some of the world's best roses, including '*Charlotte Armstrong*', '*Chrysler Imperial*', '*Queen Elizabeth*' and many others.

The following notes have been taken largely from the minutes of the June 20th meeting. It is hoped that they may prove helpful to the amateur hybridist in avoiding some of the mistakes that might be made through lack of technical training.

1. *Crosses already proven possible*: *C. Sasanqua* '*Narunigata*' (a tetraploid) has been crossed with *C. Reticulata* '*Buddha*' successfully by Mr. Howard Asper in Southern California.

2. *Factors to consider in hybridizing program*:

- a. *Mother plants*: Dr. Lammerts did hundreds of crosses using *Reticulata* pollen, as no *Reticulatas* were available then as mother plants. Almost complete failure resulted due to the difficulty of making successful crosses using pollen from a high chromosome count plant on a plant with a lower count. A very few plants, however, did have foliage of reticulate type and so were probably hybrids.⁽¹⁾
- b. *Age factor* of plants being worked with is very important. Never try to use new grafts. The older the mother plant the better, as no results will be obtainable if plants are too young.
- c. *Temperature*: Lath house is usually better for hybridizing program than green house. Night temperature in green house is usually too high for holding buds. With *Reticulata* hybrids at Descanso, greenhouse temperature at night was dropped to between 32 and 40 degrees in order to set seed. This night temperature was also optimum for flower development.
- d. *Seed setting*: Semi-girdling a plant to reduce vegetative growth often helps set seed — if one is willing to risk injury to the plant. Confining the root system will help achieve the same result.

3. *Seed-bearing varieties of Reticulata*. '*Crimson Robe*' has been proven the best seed-setter of the *Reticulatas*. Other good seed bearers are '*Buddha*', '*Lion's Head*' and '*Shot Silk*'. Use all four varieties as mother plants.

4. *Chromosome Counts*. Dr. Lammerts emphasized the fact that many of the recorded counts may not be accurate and should be rechecked. Dr. Hilsman's chart does not show sources of information and may not be the last word on counts. Many of these counts should be double-checked before work is done on them. '*Crimson Robe*' has been said to be a pentaploid (75 count) but that should be verified as there is now some doubt about this. Count of '*Narunigata*' should be rechecked. A recent letter from Mr. E. C. Tourje indicates '*Crimson Robe*' is actually a hexaploid according to a late recheck by Dr. A. E. Longley.

5. *Recognizing polyploidy after colchicine treatment*. Dr. Lammerts warned that Committee members may be looking for larger changes than colchicine treatments are apt to make. Treating a new bud with colchicine does not mean that success will produce an entirely new count growth above the treated bud. Thousands of cells exist in every bud, at unequal distances from the colchicine and all cells are at different stages of cell

(1) On this point, see other opinions expressed herein.—Ed.

division. Since so few cells may be altered, we should look for individual leaves which show signs of change. The increase in chromosome count will often be indicated by thicker, more heavily-veined leaves, but the most reliable indication is the increased size of the stomata. These stomata are the pores through which the leaf breathes and they are readily seen on the under side of the leaf with the aid of a magnifier. A glass of about 20-power is most suitable for this examination and the increase in size of the stomata will be on the order of 50% or greater.

Dr. Lammerts suggested that members learn to recognize changes by practicing checking of stomata on different varieties of Japonica, as well as different *Camellia* species. A magnifier was produced and this technique was practiced on a plant exhibited by Mr. Walter Peterson on which at least two leaves showed indications of polyploidy.

6. *Work with plants after polyploidy has been achieved.* Once the indications of change are achieved the plant should be cut off immediately above such changed leaves in order to force the axial bud at the base of the leaves into growth. After sufficient growth is obtained and hardened off these shoots should be grafted onto other stock. Even at this stage entire shoots may not be changed and the procedure may have to be repeated to get a fully polyploid plant. It seems reasonable to think that the same effect could be obtained by leaving the shoot on the original plant and cutting out all growth above the altered portion except that showing indications of change. This is the technique Professor Olmo (University of California at Davis, California) has used on grapes and it avoids the hazard of loss from grafting.

7. *Making chromosome counts.* Dr. Lammerts warned that root-tip counts are not too reliable and that the count is most easily made on pollen grains. The pollen should be collected from partially opened flowers (about $\frac{1}{3}$ open as first trial), suspended in "aceto-carmin" solution and then mounted between cover slides for direct counting.

Dr. Lammerts also suggested that members obtain a simple text on cytology and learn to make their own cell counts, by following the relatively simple techniques adequately described in the texts. This would enable members to determine whether fertilization had taken place even though a seed pod does not fully develop and if fertilization has been achieved, it would then be possible to vary climatic conditions artificially in order to try to obtain full development of viable seed. Dr. Lammerts stressed the importance of environmental factors even after the successful alteration of chromosome counts with colchicine, in determining success or failure of experiments. He also warned against over-fertilizing plants if setting buds.

8. *Colchicine solutions.* Solutions now being used by Committee members (.2% to .5%) seem to be satisfactory. In applying, it is best to cause exposure over a long period, such as by wrapping a cellulose sponge or cotton dipped into solution around bud and leaving there.

9. *Radiation.* Dr. Lammerts was very pessimistic about the possibility of inducing any desirable change by means of X-ray or other radiation. He pointed out that such treatments can and do produce mutations but the mutants cannot have characteristics which were not present to some degree in the parent plant. In other words, the radiation treatments can only produce changes by destroying genes and may in this way suppress dominant characteristics, but new characteristics not present in the parent plant can never be developed. For example, since no factor for yellow is present in the camellia as now known, such a color would never be obtained by this means.

AN APPRAISAL OF THE RETICULATA (Cont. from Page 4)

hybrids is going to be necessary before we get a plant of really complete value. The hardiness, foliage and plant form need to be improved and the growth habits brought under better control. There would seem to be no good reason why this cannot be brought about although, perhaps, at some sacrifice in bloom size. Unless this is done, however, the overall value of the *reticulata* would seem to be distinctly limited, although many of us will grow them simply because the bloom is so exotic and spectacular.

HYBRIDS — PAST AND FUTURE

David L. Feathers, Lafayette, California

In his informative Revised Edition of "Camellias In America" published about two years ago, Dr. H. H. Hume has included a discussion (Chapter X) of Camellia Breeding in which he points out some of the desirable objectives in the crossing of species and, possibly, also of the genera. In this chapter, mention is made of the camellia 'Emperor' said to have been described by Berlese as being a hybrid between *C. reticulata* and *C. japonica*. Upon investigating into the matter, primarily because it is generally believed there are no such hybrids extant, the writer found the following description of this supposed hybrid in Verschaffel's "New Iconography of the Camellias" (page 112):

EMPEROR

"Extremely lovely irregularity, very large petals, compact, twisted, ruffled, variously grouped, of a deep crimson red, fading to a whitish tint at the edges.

We owe this camellia, which has been grown for several years, to Mr. Davies, horticulturist near Liverpool, who obtained it by pollinating a *C. Colullii* by the *reticulata*.

The individual plants which we examined in his establishment at the time were two or three meters high, and were literally covered with blossoms; its successive blooming in our greenhouse has proven that it is a constant variety of splendid aspect and of an unusual floral fertility."

There is, however, no authentication of this as being an actual *japonica* x *reticulata* hybrid; in fact, to the best of the writer's knowledge it has not yet been established beyond all doubt that such a cross is possible⁽¹⁾. In any event, this particular camellia does not appear to have attained lasting popularity unless it be, as some contend, synonymous with 'Emperor of Russia', which the above description generally fits.

Aside from the question of compatibility, which is serious enough in itself (*C. japonica* has 30 chromosomes — 15 pairs — while *C. reticulata* has 90 chromosomes — 45 pairs) because there is every reason to believe that the only *reticulata* available to Davies at the time must have been 'Capt. Rawes'⁽²⁾ the question of fertility arises, as the latter is commonly believed to be sterile. Thus the element of doubt as to authenticity of this presumed hybrid is rather heavy. There are, however, a number of arguments that can be advanced to the contrary.

For one thing, it is not certain that *C. reticulata* 'Capt. Rawes' is sterile as reputed, as there are recent reports of seed having set on a plant in California. Furthermore, the writer's own attempts at crossing *C. japonica* 'Triphosa', using 'Capt. Rawes' pollen, give every evidence of having proved successful, judging from the first year's blooms on one seedling and growth characteristics on others. To complicate the matter still more, Mr. Walter G. Hazlewood, of Epping, N.S.W., Australia, expressed the conviction that the 'Capt. Rawes' in Australia differs from that in this country and, if one may rely on foliage indications and accurate labeling, his belief has been substantiated.

For another, while there are as yet no recorded hybrids involving the species *japonica* x *reticulata*, the evidence is compelling that *C. saluenensis* crosses rather readily with *reticulata*.⁽³⁾ The chromosome number of *saluenensis* is the same as that of *japonica* (30) and that these latter two species are highly compatible and give excellent hybrids is demonstrated by *C. 'Donation'* and *C. 'E. G. Waterhouse'*, to name just two of the better ones. While the fact that *reticulata* is compatible with *saluenensis*, and *saluenensis* is compatible with *japonica* is not in itself absolute proof that *japonica* will cross with *reticulata*, it is, nevertheless, presumptive evidence until proven false. Furthermore, there is this highly important, indisputable fact to consider: the genus *Camellia* is so unstable and unpredictable generally as to warrant some belief that genetic rules may not always apply.

(1) For a discussion of this point, see the interesting articles by Dr. Walter E. Lammers in the American Camellia Society Yearbook for 1954, pages 1-6 incl.

(2) *C. reticulata flore pleno* ('Robert Fortune') did not bloom in England until 1857, or only three years before the end of the period Verschaffel's Iconography encompassed—1848-1860.

(3) As witness the English hybrids 'Inamorata' and 'Salutation'.

Proceeding along these practical lines of reasoning, but without sufficient confidence in the outcome to warrant the use of the usual controls (emasculation and bagging of the pollinated flowers), the writer attempted a large number of crosses a few years ago, involving *C. reticulatas* 'Capt. Rawes' and 'Crimson Robe' as pollen sources and *C. japonicas* 'Triphosa' and 'Lady van Sittart Red', among others, as seed bearers. Based on the first year's flowering and judging from foliage and growth habit characteristics, it would appear that the crosses were successful in a number of instances and, furthermore, that they are rather readily accomplished. In some instances, the flowers are quite inferior — to either parent — and definitely retrograde. In other and fewer cases, rather unusual and promising forms were obtained. Color transparencies have been shown of the better ones to bloom to date and, while absolute proof of their presumed hybrid origin is lacking, the blooms seem to have created interest even among plant breeders and geneticists. Unfortunately, until offspring are obtained from back-crosses and self-pollinations some years hence, there can be no more than reasonable conjecture as to their actual hybrid origin. This brings us to another point.

The results of the first generation of hybrids are usually indicative only — not the end product that one aspires to when he makes the cross. Geneticists tell us that, in hybrids, the best hope lies in the second or succeeding generations. It may be that, the wider the cross, the greater the number of combinations required to achieve the desired end. (One may assume, therefore, that the Yunnan hybrid *reticulatas* may very well have been the result of many generations of careful experimentation.) This principle appears to have been completely borne out, insofar as camellias are concerned, judging from second-generation hybrids which have come into bloom during the past year, originating from crosses of the species *saluenensis* x *cuspidata*, *saluenensis* x *japonica* and combinations of, perhaps, all three of these species. We are getting new color shades, new growth habits, new leaf patterns, even new flower forms. Vigor seems to have been greatly improved in most cases. Esthetic beauty, particularly, is emphasized rather than flower size — at least, until very lately, when we have had a number of indications of flower sizes — and forms — which give every promise of rivalling the *reticulata* itself, besides combining some absolutely new color tones. *C. saluenensis* appears to have contributed lily-like flower forms and strap-petal types, *C. cuspidata* some axillary blooming, pendant, small-leaved sorts with greater bushiness, while we have some brand-new leaf styles in the larger sizes. All in all, it looks as if the hybrids are approaching the center of the stage. Some are being area-tested now and we will have more on this, including the degree of cold resistance, within the near future.

WHY BELONG TO A CAMELLIA SOCIETY? (Cont. from Page 3)

from the local society viewpoint, this undertaking must rank as the most forward step yet taken by the American Camellia Society.

Now that the ice has been broken, we should like to suggest that the greatest single contribution that A. C. S. and the local societies could make in the way of service to their members would be — first, to adopt a uniform system of rating camellias and, secondly, include in each issue of the annual *Yearbook* brief comment on and the rating of as many varieties of camellia as possible, with the ultimate object of covering the entire field. Those camellia society members who belong to the American Rose Society will be familiar with the fact that independent rose rating has long been a service of that splendid and immense organization. We feel this would be the best possible method of appraising the actual worth of the many thousands of named camellias now being grown if based, as the rose society's rating is, on the independent judgment of qualified amateurs from all the camellia-growing areas, using a common, accepted standard of evaluation. This is a large order and it cannot be accomplished overnight. However, we cannot start thinking about a matter of such importance too soon. Here is something for which there is real need. We will have further comment on this subject within the near future.

TAP ROOTS IN CAMELIAS

B. W. Doak, New Zealand

I was most interested in Dr. Merrillees' article in the 1955 *Camellia Annual**. His work shows quite clearly that for seedlings of a number of varieties of *Camellia japonica* tap roots are not usually of any great length. I have had little experience with seedlings of this species, but this situation does not hold for seedlings of at least two other species, viz., *C. saluenensis* and *C. hongkongensis*. Both of these produce very well developed tap roots. Several six-month-old seedlings of the latter species were lifted recently and in each case the tap root was broken at about 15" depth. An attempt to trace these roots further was abandoned after excavating to 20" from the surface. The roots had penetrated into a firm clay sub-soil at least 6". The surface 12-14" was of free texture well supplied with organic matter.

Several years ago I raised approximately 60 seedlings of *C. saluenensis* x *C. reticulata* crosses. Before the leaves appeared, the radicle, in many instances, had penetrated the hole in the bottom of 3" pots. In spite of several shifts to larger pots, the tap roots continued to grow through the holes. I recently had occasion to shift a seven-year-old plant of this cross which had been shifted from open ground once previously. At a depth of 18" three roots had a diameter greater than $\frac{5}{8}$ ".

About the same time I lifted 32 five-year-old plants of a second batch of the same cross. These had been twice moved from open ground. All had very strong tap roots. Several had four roots as thick as a lead pencil at 18" deep.

Perhaps *C. japonica* is somewhat unusual in its rooting behavior.

(Reprinted from *Camellia Annual* of the Australian and New Zealand Camellia Society—Dec. 1956, No. 3.)

EXTENSIVE CAMELLIA NOMENCLATURE STUDY

Cornell University has announced it will receive a \$59,650 grant to the Liberty Hyde Bailey Hortorium for a world-wide study of camellias.

The grant comes from the Longwood Foundation which was established by the late Pierre S. DuPont.

Dr. G. H. M. Lawrence, director of the Hortorium, said the grant will finance a research project to clear up "worldwide confusion in the nomenclature and classification of camellia varieties."

He pointed out there are more than 10,000 reported varieties of camellia in the world, but many of these are grown under as many as five different names.

Dr. Lawrence said the project, to last five years, will "provide an international check-list of camellia varieties and an adequate documentation of those now being grown."

The Hortorium, part of the New York College of Agriculture at Cornell, has facilities for collecting, identifying, testing, photographing, preserving, and recording plants.

Ralph N. Philbrick, a botanist from Los Angeles, California, will head the camellia project. During the five years, Philbrick will make several trips to Europe and Asia to collect and photograph specimens.

Mr. Philbrick will cooperate with the American Camellia Society, The Camellia Society of Southern California, the Royal Horticultural Society of London, and other organizations in Europe and Japan.

Mr. Philbrick will be guided by an International Committee which includes Dr. William Hertrich of the Huntington Botanical Garden, San Marino, California; Mr. Ralph S. Peer of Los Angeles, president of the American Camellia Society; and Dr. H. Harold Hume of the University of Florida.

(As reported by John L. Kochne, Jr., Editor 'Newsletter', official publication Camellia Society of the Potomac Valley.)

*For a review of this interesting article, see October, 1956, issue Vol. 10, No. 1, of this publication, page 18.—Ed.

THE EFFECT OF NON-NITROGENOUS FERTILIZER ON CAMELLIA BLOSSOM SIZE

Robert F. Cutter, M.D., Berkeley, California

Introduction

The object of this experiment was to find whether fertilizer lacking in nitrogen but high in potash and phosphorous would appreciably increase the size of camellia blossoms. It was a project of the Research Committee of the Northern California Camellia Society.

The variety chosen was *Daikagura* and its sport, *High Hat*, because the blossoms are notably smaller in Berkeley, California, where this work was carried out, than in Lafayette, just ten miles' air distance, where winters are colder and summers are warmer. In other words, this variety was chosen because it was known to be capable of producing larger blossoms than it normally does in Berkeley.

Sometime between February 1st and the start of the test (May 24th) all of the camellia plants used in the test had been fertilized once with a prepared dry mix analyzing 4% nitrogen, 6% phosphoric acid and 8% potash, to the extent of perhaps one handful. It will also be noted that all the test plants were being grown in the ground, and that California soils are typically fairly high in potash and somewhat deficient in nitrogen.

Procedure

The fertilizer used was of the following composition:

Nitrogen, organic	0%
Phosphoric acid available	10%
(derived from Phosphoric acid)	
Potash, water soluble	10%
(derived from Muriate of Potash)	

As the object of the experiment was to find out whether the change in size, if any, would be significant and worthwhile and since it had to be carried out when, as and if it could be fitted within a busy travelling schedule, no attempt was made to control the experiment beyond the conditions which would hold in the average garden.

The liquid fertilizer was measured roughly in a 2½ oz. measuring glass into a watering can labeled "8 quarts" according to the manufacturer's directions—1 teaspoonful per quart. The amount of the diluted liquid fertilizer applied to each plant was not measured. It averaged about 2 quarts per plant. However, smaller plants received less than did larger plants, as they normally would in garden procedure.

In measuring the flowers, likewise, extreme accuracy of measurement was not attempted; they were simply measured in what appeared to be their largest diameter by holding a ruler above them. The accuracy of the measurement is probably correct within a tolerance of 3 millimeters. When there was only one fully open blossom on a plant, it was measured. When there were more than two fully open blossoms on a plant, the two blossoms which appeared largest were measured.

Eight groups of two plants each were chosen. In each group, one plant received the fertilizer and the other plant, usually adjacent to it and of approximately the same size, received no fertilizer.

The fertilizer schedule was as follows: May 24, June 17, July 10, July 27, August 21, September 30, October 28, November 25, December 16, 1956, and February 1, 1957. The irregularity of the schedule was influenced by the weather, but more by an irregular travelling schedule.*

Table No. 1 shows the results. The average size of the blossoms of plants treated with fertilizer was 74 millimeters. The average of plants not treated with fertilizer was 75 millimeters, showing no apparent difference.

*The nine intervals involved average 28 days each, the shortest being 17 days and the longest 46 days.—Ed.

TABLE No. 1
EFFECT OF O-10-10 AND SHADE ON SIZE OF CAMELLIA BLOSSOMS
Plants Ground-Grown in Berkeley, California

Size in millimeters of the two largest flowers on each plant. Shade and fertilizer as noted.

Date of observation	Shade	11/25/56		12/16/56		1/13/57		2/1/57		3/10/57		Average		Average With & Without Fert.
		With Fert.	Without Fert.	With Fert.	Without Fert.	With Fert.	Without Fert.	With Fert.	Without Fert.	With Fert.	Without Fert.	With Fert.	Without Fert.	
High Hat	80%	70	---	---	---	68	---	65	81	60	69	66	74	70
Daikagura	75%	---	---	---	---	78	---	75	73	67	69	73	71	72
Daikagura	60%	---	76	---	70	80	81	73	78	76	71	76	75	75
High Hat	60%	80	---	59	---	---	72	69	62	60	71	68	69	68
Shady location average														72 mm.
Daikagura	35%	---	---	---	---	---	---	89	72	65	80	77	79	78
Daikagura	25%	---	87	75	76	82	83	74	81	79	82	78	82	79
Daikagura	25%	---	---	---	---	---	---	82	---	79	75	81	74	78
Daikagura	25%	76	---	69	---	86	72	76	71	79	71	74	73	74
Daikagura	25%	78	---	60	---	71	72	77	---	69	80	74	73	74
Average		76	82	67	73	77	75	76	74	71	74			
Overall average without fertilizer: 75 mm.														
Overall average with fertilizer: 74 mm.														
Sunny location average														77 mm.

TABLE No. 2
MEASUREMENT OF CAMELLIA BLOSSOMS IN LAFAYETTE

March 10, 1957

(Size in millimeters of three largest blossoms)
Container - Grown Plants

Daikagura

Plant No. 1	95	89	90
Plant No. 2	91	95	94
Plant No. 3	100	102	98

High Hat

Plant No. 1	97	101	100
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Average: 96 mm.

(Average size of blossoms in Berkeley measured on
the same day: 73 mm.)

While the difference is not sufficiently great to be statistically significant, there may be some indication that the plants receiving more sun had larger blossoms than the plants receiving less sun.

On March 10, 1957, 29 blossoms were measured in Berkeley, averaging 73 mm. in diameter. On the same day, *Daikagura* and *High Hat* blossoms were measured at Mr. Harold Paige's home in Lafayette according to Table No. 2. These camellias averaged 96 millimeters. One needed no ruler or other measuring device to tell that the Lafayette camellias were significantly larger than the Berkeley camellias. Unfortunately, the location as to percentage shade of these Lafayette plants was not recorded.

Conclusion

Under the conditions, procedures, and limitations outlined above, a liquid fertilizer labeled O-10-10 nitrogen, phosphorous and potash had no apparent influence on the size of the camellia blossoms of the varieties listed.

ANOTHER SELECTION OF "TEN BEST"

We quite agree with the appraisal of others that the article "Camellias in Descanso Gardens", by John L. Threlkeld and Mark J. Anthony, which appeared in the April, 1957, issue of *The National Horticultural Magazine*, published by the American Horticultural Society, which is at once comprehensive, informative, authoritative and interesting, is well worth reading and only wish that space permitted our reproducing it here in full.

Embracing as it does list selections of "bests" by colors and overall, by growth habits and a collection for the longest blooming season, containing a discussion and description of the species and hybrids, and replete with suggestions and guidance of the most practical sort, this is altogether a splendid treatise on camellias.

Polls or an individual selection of "best" varieties are always interesting, so we give you below Messrs. Threlkeld and Anthony's choice of the *best ten japonicas* for their Southern California climate, listed alphabetically:

ADOLPHE AUDUSSON SPECIAL	GIGANTEA
ALBA PLENA	GLEN 40
DAIKAGURA (all types)	HERME
DEBUTANTE	KUMASAKA
ELEGANS (CHANDLER) (all types)*	LALLAROOK

* presumably includes C. M. WILSON and SHIRO CHAN.

These are all standard and time-proven, seem to do well almost anywhere and one would be hard put to find fault with this selection.

MORE ON SEED GRAFTS AND HYBRIDS

Elsewhere in this issue we have discussed Hybrids and the possible use of *Reticulata* "Capt. Rawes" in plant breeding, notwithstanding its reputation for being sterile. There has just come to hand new and supporting evidence in this regard from Mr. John R. Sobeck of Los Angeles, whose experiments also include an interesting report and case history on "Seed Grafting", a follow-up to his original article in our October, 1956, issue. From a recent letter, we have obtained the following informative account:

"In December, 1954, I cross-pollinated *C. saluenensis* with fresh pollen from *Reticulata*- "Captain Rawes", the flower then being covered with a bag. It subsequently developed a seed capsule about 1½ inches in diameter which contained 4 black seeds. These I duly planted in November of 1955. The seeds sprouted in the following spring and by June of 1956 they had grown to a height of about 4 inches. At that time I considered they had reached a satisfactory state for grafting, which was done leaving the seed-shell still attached. They were grafted on ½ inch diameter gallon-can japonica understock, using the summer-graft technique described in my previous article.

After four weeks had passed, it was found the new grafts had become thoroughly callused and the glass jars were accordingly removed. I then placed the grafted plants, which were being grown in a lath house under 150-watt Sylvia Reflector Flood Lights for 7 hours every night over the succeeding six-months period. They were fed a weak solution of complete fertilizer once a week during this entire period, and growth was very rapid. Three months after grafting I pinched out the very tip of the grafts to make them branch. By November, 1956 (1 year after planting the seed and five months after grafting), buds started to form, at which time I discontinued the artificial light and removed the plants from the lath house to the outdoors.

By March of 1957 I had my first blooms—on a plant then about 18 inches tall—which was still in the 1-gal container. It was an upright grower and was heavily budded. The leaves are very similar to *C. saluenensis*, but the flowers, which were about 2½ inches in diameter, had 16 petals, which were twisted and upright like a *reticulata*. The color was pink with white shadings, each petal having a notch at the tip. The crown of the flower is about 2 inches high and rather flat. A number of grafts were thereupon made on 5-gal. understock to preserve the hybrid.

C. saluenensis is unquestionably one of the easiest species to cross-pollinate and it is also a very good seeder. However, I have crossed a number of species, including *C. japonica* x *C. reticulata* (Yunnan varieties) and all have been successful. I have also used Forrest's Wild (the Species *Reticulata*, which is a very good seed-bearer.

I should like to make a few observations about camellia hybridizing based upon my own practical experiences. To begin with, I cannot agree with "what the book says" about the incompatibility of camellia species having different chromosome counts. My experiments would indicate that you can cross a 90-chromosome camellia with one having 30 chromosomes and the other way around. The assumed chromosome number of the Yunnan *Reticulatas* is 90, of *Reticulata* "Capt. Rawes" 45, and *saluenensis* has 30. I have plants to prove that hybrids are possible either way. *C. saluenensis* crosses very readily with *C. reticulata* (Forrest's wild form) as has been demonstrated by the 24 seed pods I now have on the latter, representing a 100% take.

Here is a suggestion—about DOUBLE GRAFTING, which may be of interest, particularly to nurserymen:

There are some species of camellia which are either difficult to graft or which grow very slowly on japonica root stock. This problem has been encountered with pears, some of which do not unite well with quince. To overcome this difficulty, in such cases a variety of pear which does graft readily on quince is first worked onto that stock and grown for one season. Then the graft is cut above the union and the hard-to-graft

variety worked onto the pear-portion of the understock. It has been found that this overcomes the difficulty.

A similar technique can be used with camellias. For example, nurserymen have always had trouble grafting *C. reticulata* "Moutancha" on japonica understock. By first working on "Shot Silk" or the Forrest (wild form) *reticulata*, then double-grafting "Moutancha" the following season, practically a 100% take may be obtained as well as vigorous growth. The first graft is cut back to within about 2 inches of the union. *Reticulata* seedlings are pretty precious to use as root-stock but they would probably eliminate the necessity of double-grafting. I will have some of these grafts (made February 15, 1957) on display at the Camellia Show in Descanso Gardens near Los Angeles next spring—the growth to date is almost unbelievable."

Here is further evidence tending to disprove the widely-held impression of the sterility and incompatibility of the *reticulatas* as a class. You will note elsewhere herein that the cross between *C. reticulata* x *C. sasanqua* is also reported as having been achieved, although this does involve species having the same chromosome number.—Ed.

SOME SOUND ADVICE

For a long time we have held in our files, awaiting a good opportunity to reprint it, a portion of an article by Mr. Fred McGee of Florence, South Carolina, which first appeared in the March, 1955, issue of the Bulletin of the South Carolina Camellia Society, through whose kindness the following simple but sage advice is reproduced:

"I contacted one of the most experienced camellia growers in Florence, Mrs. Peter H. McEachin, affectionately known to all as 'Miss Peg', but should more properly be known as 'Mrs. Camellia'. I asked her two questions: First, how long she had been growing camellias. She answered, 'All my life'. As a small child she used to help her mother and now she is a grandmother. My second question was: "What advice would you give a beginner"? Her answer was:

'My advice to beginners is "grow camellias". You don't learn to swim sitting on the bank, and you don't learn to grow camellias saying, "Oh, I wish I could".

'They are hardy, inexpensive, valuable as landscape shrubs, and glorious in bloom. A camellia is not the delicate, temperamental plant it was once considered. If the beginner chooses hardy, tried and true varieties, selects healthy plants and gives them the proper environment, he will find them practically self-sustaining once they become well established.

'Consult a grower in *your* vicinity with some years of experience as to varieties, visit gardens in bloom to make your choice of color and formation, and learn, either by asking or reading, how and where to plant. Buy the plant priced to suit the family budget. Often the small or medium size transplants more successfully than the large. Camellias grow faster than you think with proper attention but not too fast for small homes so popular today. They enhance in beauty and value with age and live to furnish beauty to many generations.'

"I also contacted a nursery, 'Charlotte's Flowers' of Timmonsville, S. C. and asked Mrs. Charlotte Holman what advice she would give a beginner. This is what she said:

'When a beginner comes to my nursery to buy and offers to take my advice, I try to steer them to the tried and proven varieties of camellias. I offer them: Prof. Sargent, Kumasaka, Elegans, Debutante, Doncklarii, Empress.* Magnoliaeflora, Lady Van Sittart, Adolphe Audusson, Daikagura, Joshua E. Youtz, Dr. Tinsley, Herme and all of its sports, as well as the Finlandia Family are all good growers and good bloomers. I try to show them the difference in a sturdy, well grown, bushy plant and one that has made tall, spindly growth. I explain the effect cold weather has on the formal doubles** and recommend Mathotiana, Rosea Superba, and I explain the root system of a camellia and advise how to plant.'

*Lady Clare.—Ed.

**In the Deep South.—Ed.

THE MEANING AND USE OF "CULTIVAR"

George H. M. Lawrence

(Reproduced from the American Horticultural Council News, April, 1957)

Many persons have asked, in all sincerity, "Just what is this 'cultivar' business all about?" It is a fair question, and it deserves a fair answer.

Recent developments at the international level have a bearing on "this cultivar business" and therefore may be cited in the answer.

In the first place, however, a 'cultivar' is any cultivated variety, as the term 'variety' is used in the general horticultural sense. A 'cultivar' may have originated from a botanical species, or it may be a selection of a hybrid group. It is any plant or assemblage of plants that have originated in cultivation or which may have been found in the wild but are recognized only by horticulturists, foresters, or agriculturists. It is a unit that is intentionally maintained as uniform as possible, and which is distinguished by any characters (morphological, physiological, chemical, or others) that are significant for the purposes of agriculture, horticulture, and/or sylviculture.

There is nothing new here, and so one may ask, Why inject a new term when the word 'variety' is good enough? Everyone working with cultivated plants knows what is meant when one talks about this or that 'variety'. The internationalist will nod in agreement, but will point out that the collective "everyone" must be restricted to those whose language is English.

In Italy the garden plant we call a variety is termed *razza* (pronounced rhat-suh). In Dutch it is *ras*. In German language areas it is called *Sorte* (sort-uh). In Scandinavian countries it is *sort*. The point is that none of these terms even remotely resembles our word *variety*. For this reason, in those language areas there has never been any confusion between the garden *razza*, *ras*, *Sorte*, or *sort*, and the *variety* as understood by botanists.

Botanical Variety

The 'botanical variety' has been accepted as biologically distinct from the garden variants. It is, by most concepts, a more or less interbreeding natural population occurring in the wild, and one which may or may not have its own general area of distribution. Unlike the 'variety' of the horticulturists, it is capable of self-perpetuation for centuries. The term 'variety' was applied to this group of wild plants by English and early American botanists, and is a literal translation of the Latin term *varietas*.

There began the confusion — in the mid-1700's. It began then because for centuries before, British gardeners had been calling their garden races and selections 'varieties'. As a matter of fact, most of the plants Linnaeus treated as *varietas* in his *Species Plantarum* (1753) were of garden origin. Others were populations of wild variants, that is were "baby" or incipient species, or they were native plants not sufficiently distinct in his opinion to deserve status as species. Later botanists, perhaps recognizing the biological difference between the wild populations and the named selections in cultivation, rejected the garden variants from consideration and restricted the use of *var.* (meaning *varietas*, not 'variety' as used by gardeners) to the wild populations.

Horticultural Priority

Some of our best horticulturists hold the view that in English language areas priority of the term 'variety' by horticulturists should be recognized by botanists and restricted to cultivated races, clones, or groups — just as *razza* is so restricted in areas of the Italian language. They hold also that botanists should restrict themselves to the Latin term *varietas*. Or, better yet, find and use a term not remotely suggestive of the English word *variety*.

Certainly this would end all confusion. But of more practical concern, it is equally true that, since the confusion is not a problem of botanists, it is most improbable that they are going to change a procedure established in the English language editions of their written nomenclature codes that have been in effect for the last two centuries. At the same time, in recognition of the problem it is most reasonable that the English-

(Continued on Page 18)

"GOOD BUT NOT GLAMOROUS"

Camellias are, in some respects at least, somewhat like people. All of us know the flamboyant type of person and the grandstander, the publicity-seeker and the person who talks so much he never has time to listen and learn. There is also the quiet, still-water-runs-deep type—one who thinks twice before speaking and then says something worthwhile—the fellow who in time of need is a friend indeed.

So it is with camellias. Some are "loud" in everything—name, publicity and with an outward appearance (flower) that often belies their true character. Others perform faithfully and well but without any fanfare. The following is a by-no-means-complete list (alphabetically arranged) of some of the less prominent but consistently good-performing camellias with brief description and terse comment based on the writer's experience with them over a long period of years:

BRILLIANT: An incomplete double, medium-sized mid-season to late red that grows very well and makes a very attractive garden plant, in or out of bloom. Quite upright. Profuse bloomer.

CANDIDISSIMA: A formal, medium, late double white, very similar to Alba Plena but often tiered, which picks up where the latter leaves off blooming. Extremely compact, slow growth, buds heavily and, surprisingly, stands sun very well. Good for either garden or tub specimen. Rather small foliage.

COUNTESS OF ORKNEY: Another fairly late one. Incomplete double of good size, very fine red striping on white base, slow growth, one of the best shaped plants and stands the heat well.

DAISY BANKS: A large, semi-double white of good height and form, excellent upright growth and good foliage, midseason-to-late, consistent performer.

ECSTASY (Doty & Doerner): This pink formal is fairly early, has good foliage, medium growth, blooms well and an altogether consistent performer—probably under-rated, as good form and much beauty.

ELISABETH: This variable formal (from pure white to all degrees of bright pink marking up to some solid pink sports) is one of the best open-sun performers we know of. Very long blooming season, fine dark foliage, extremely strong growth and quickly adapts itself, flower of great beauty with fine bud and cupped petals—mid-season to very late—tremendously under-rated.

MARTHA BRICE: Late in some sections but has fine shade of light pink, rather flat, large anemoneform flower, somewhat spreading growth habit, does well in container.

ROSEA PLENA: A consistently good performer, this upright-growing, medium large formal double, of rose-pink with prominent, distinctive veining performs well until the hot weather, which causes fairly short life of fine bud form, but will yield many outstanding blooms. Prolific.

STARDUST: Possibly not so universally satisfactory as some of the others but comes from a good source (Duc d'Orleans or Marguerite Gouillon sport) of bright pink and good, full peonyform, bushy growth, mid-season.

VEDRINE (Ruby Glow): This anemoneform, deep blood-red, medium large variety usually blooms both early and late and does well seemingly anywhere in the garden. Strong, rather spreading growth with fine, large, dark green foliage. Although flower does not hold as well as some, has many exceptional qualities.

YOSEMITE: Newer than the others but has proven completely satisfactory in both cool and warm climates. Large, semi-double flower having pleasing shade of red, somewhat fluted petals and rather high form, with great substance. Like many good reds, a little on the late side, but distinctive and definitely under-rated. —D. L. F.

OTHER NEW OFFICERS—SACRAMENTO SOCIETY

First Vice-President—Erwin E. Nowak
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THOSE FASCINATING SPORTS

Helen Dobson Brown, Sacramento, California

A sport is defined in part by Webster as "A sudden spontaneous deviation or variation from type, a mutation; a bud variation."

Anyone with camellias may find a sport on one of his bushes during its blooming season. This sport or mutation may be different from its parent in form as well as color. However, the variation seems most often to be one of color. For instance *High Hat*, a pale pink sport of *Daikagura*, is a *Daikagura* in formation. Then along has come a creamy white sport of *High Hat*, now on the camellia market as *Conrad Hilton*. *C. M. Wilson*, a pale pink sport of *Elegans*, is like its parent in every way except color. *Cinderella*, winner of the first All-America Camellia Selections Award, is a sport of *Fred Sander*. In this instance also the deviation is one of color, not form. A mutation of form only is illustrated by *Hooper Connell*, sometimes described as a ruffled *Alba Plena*.

Of course, once propagated and introduced, a sport must stand on its own merits. But it has been found that a sport generally retains the growing and performance habits of its parent, while differing in color, form, or both. So the appearance of a sport on an already popular variety is an event of interest in the camellia world. Like a child whose debut into society is enhanced by notable ancestors, such a sport usually is assured of a warm welcome when introduced on the camellia buyer's market.

Sometimes a plant and new variety resulting from a sport is called by a name completely different from its original source, such as *Shiro Chan*, the white sport of *C. M. Wilson*, or *Monte Carlo*, the light pink sport of *Finlandia*. But often the name given is that of the variety from which it sprung, plus a word describing the specific mutation, such as *Ville de Nantes Red*, *Red Finlandia*, or *Gigantea Red*. Some growers have been bothered by the lack of uniformity in the naming of sports, and feel that all sports should be identified by name with the parent plant. This seemingly simple solution develops complications, however, when applied to those varieties, such as *Herme*, which almost consistently throw sports.

Finlandia, popular with many people, has produced some particularly beautiful sports. So far, these sports, while differing in color, have retained the *Finlandia* flower form and plant growth habits. The flowers in this group, in general, have excellent substance, hold on the plant well, do not shatter and bloom profusely. If you are an admirer of *Finlandia*, probably you will be interested in acquiring some of the following fine varieties which are related:

1. *Finlandia Variegated*—White streaked crimson; sometimes called Margaret Jack or Aurora Borealis. Usually the variegation is light, sometimes only flecked, emphasizing its fluffy formation.
2. *Finlandia Blush*—Blush pink; also known as Marie Griffin.
3. *Monte Carlo*—Beautiful light pink.
4. *King Lear*—Cherry red, marbled with white; sometimes large variegation. This variety is especially striking.
5. *Finlandia Red*—Salmon red form, sometimes called Aurora Rosea.

Other noteworthy sports are: *Adolphe Audusson Variegated*; *Eugene Lize* and *Ville de Nantes*, both sports of *Donckelari*; *Lady Kay*, sport of *Ville de Nantes*; *Colonial Lady*, sport of *Herme*; *Spring Sonnet*, sport of *Colonial Lady*; *Mathotiana Variegated*, and *Flowerwood*, a fimbriated form of *Mathotiana*.

Upon discovering a sport, the usual practice is to mark the branch and check it for two more years. If the same variation occurs for three consecutive seasons, the mutation usually is fixed, and may be propagated by grafting or cutting.

We some times have become excited over a sport only to be disappointed by its failure to appear a second year. About seven years ago one such instance occurred when our *Flame* produced a flower with somewhat fluted petals and a center of swirling petals interspersed with yellow stamens. There was no variation of color. Those familiar with the variety *Flame* know it to be a brilliant red semi-double with heavy yellow

stamens. *Flame* has long been one of our favorites, and we were particularly anxious to have this sport, not only because of its beauty, but because we knew of no sport of *Flame* on the market. We marked the branch and watched it the following year. We have been watching ever since. No sport has reappeared as yet.

On the whole, however, our experience with sports has been good, and we have several plants propagated from sports which we consider successful mutations. These instances are just an example of what can happen wherever camellias are grown. It is particularly interesting, of course, when these things occur in your own garden.

What causes sports? That is one of the mysteries of Camelliana. Some growers believe mutations are caused by a virus particularly occurring when a scion is grafted on root stock of a variegated variety. There seems to be no accounting, however, for sports appearing on old established plants which never have been grafted.

In amazement the question sometimes is asked, "Where will it stop?" The evidence, of course, precludes such a possibility, and a camellia enthusiast is probably the last person on earth to want such a thing to happen.

MEANING OF "CULTIVAR" (Cont. from Page 15)

speaking botanists use the phrase *botanical variety* as the English equivalent of the Latin *varietas*.

The first meeting of the International Commission for Nomenclature of Cultivated Plants was held in Utrecht, Netherlands, Nov. 21-24, 1956, under the auspices of the International Union of Biological Sciences. This Commission was created in 1947 within the framework of UNESCO, and, although a chairman had been appointed (Dr. Roger de Vilmorin, of Paris), it did not become active until last year's meeting. This meeting was called to provide the answer to valid criticisms by agronomists, seedsmen, and dendrologists in many countries of the preparation and publication by International Congresses of codes of nomenclature ostensibly for all cultivated plants—codes that were the creation of horticulturists, written largely for horticulturists, but alleged to cover the waterfront.

Since, by its title and preamble, the current Code is purportedly for all cultivated plants, leaders in agriculture and forestry rightly asked that they be given an equal part in the formulation and adoption of any code claiming to cover all plants in cultivation. This meeting was the first step in that direction. A new, but probably not greatly changed, edition of the Code will result. During its formation, preliminary drafts will be circulated for criticism to all centers of horticultural, agricultural, and dendrological activity. This means that American plant societies will be given opportunity to study these drafts and to submit proposals for additions or changes.

Accord on "Cultivar"

Complete accord was attained at this meeting on the controversial subject of the category and term 'cultivar'. A British agriculturist, who is also a most versatile linguist, skilfully presented the international aspects of the problem, showing the many language equivalents for the category which English-speaking people call 'variety'. He pointed out that in any international code there was need for an international term for the group of plants concerned.

The present Code adopts the word *cultivar* as the *international* term for the category of plants which English-speaking people refer to when they use the word 'variety'.

In recognition of the widespread use in English-speaking countries of the term 'variety', the Commission gave unanimous approval of the continued use of variety as the English equivalent of the international 'cultivar'. Thus *variety*, *razza*, *ras*, *Sorte*, etc., are linguistic equivalents, each correct in its respective language, and cultivar is used in the Code as the international term for all of these.

All horticulturists are invited to adopt it as a means of avoiding confusion with 'botanical variety'. Already it has begun to displace *razza* in Italian agricultural and horticultural literature, *ras* in the Dutch, and certainly it is increasing in English-language books and papers.



BOOK REVIEW

How to Grow Camellias, a Sunset Book. Lane Publishing Co., Menlo Park, California. 1957 Illustrated. \$1.75.

This is a handy condensation of material intended for the use of the general public rather than of camellia collectors, although it is, in many details, both interesting and useful to camellia specialists. It begins with a very readable introduction by Dave Feathers which gives in 8 pages a bird's eye view of everything known about camellias and is, obviously, intended for general readers who know little about the subject, as the title implies. This is background information and the rest of the book consists of specific data having to do with various phases of the subject.

The second chapter deals with "Ideas for Buying Camellias," a logical and useful first step into the field. A basic list of 21 standard varieties is given, and these are classified according to color. One may suppose that these are intended to supply either a complete collection for those who intend to go no further, or a good beginning for a larger collection. There are two ill-advised varieties here, *C. M. Hovey*, which shatters terrifically (if that be objectionable to the buyer), and *Purity*, which has been superseded by many better whites. Otherwise it is a fine list.

Next comes a chapter on "Landscaping with Camellias," a well-organized and useful series of practical suggestions, very fully illustrated with examples of the use of camellias. This is one of the best chapters and quite characteristic of the pictorial treatment usually given in *Sunset*. Likewise, the chapter on "How to Plant Camellias" is fully and usefully illustrated. "Caring for Your Camellias" comes next and deals with both container and ground planting. The chapter on "Pest Control" contains some useful information on controlling the various insects which make lace-work out of camellia leaves, aphids, and other pests. "How to Propagate Camellias" makes a good text for both amateur and so-called experts and is well presented. A surprise is in store for the old camellia hand in the chapter "How to Grow Bonsai Camellias." For those who like to maul, disfigure, and interfere with the growth of camellias, this will be an entrancing chapter. It tells how best to keep a camellia down, if not out. The final chapter, "A Camellia Encyclopedia" presents fourteen pages of fine print listing all types of camellias under the heading Color of Bloom, Flower Form, Blooming Period, and Comments. The varieties which "deserve special attention" are marked with a star. It would be easy to go through this list and pick flaws (such as the recommendation to pay special attention to *Panache* and *Pink Ball*) but it must be remembered that this list represents the views of both amateurs and professionals over a wide section and that many varieties will do well in some areas but not in others. In a list of this length it would be utterly impossible to satisfy everybody, of course. As it is, it is a good, workable, and comprehensive list for both beginners and specialists to use for reference.

Only one error of any consequence appears: the two line drawings of Formal Double and Rose Form have been interchanged, but this can be easily corrected.

All in all, this is a good, practical book, copiously illustrated, and we are glad that *Sunset* has seen fit to honor the camellia by including it among its long list of home and garden books.

Inquiries are frequently made as to the advisability of planting tear-drop grass (helxine) as a ground cover around camellias. These bright green, fresh-looking plants grow in semi-shade and acid soil and when camellias are kept clear of the ground, make a most attractive landscape feature. They do no harm to camellias plants; however, since they draw up a great deal of water from the ground, it is necessary to supply more water than usual to areas where they are planted. The same reasoning applies to fertilizing. Certain kinds of camellia fertilizer will burn the helxine but it will soon come back to its usual greenness. The greatest objection is perhaps the difficulty of picking out fallen camellia blooms from it, where this is desirable or necessary from a petal-blight control standpoint.

Appreciation of a camellia's foliage as a year-round garden asset is coming to be a more and more important item in the evaluation of a variety. One of the finest plants in this respect is *Pink Clouds* which has about as dark green leaves as a camellia can have; they are not only very dark green, but have an individual wavy shape which gives the plant a character of its own. Once one is familiar with this character, the plant becomes identifiable more often than not in any garden.

A sizable delegation from Southern California is already shaping up for next season's trip to the American Camellia Society's Annual Meeting in New Orleans. In addition to President Ralph Peer and wife, the following couples have made reservations: the Al Parkers, the Hubbs, the Dekkers, the Robinsons, the Lon Storeys, the Cal Mullins, and the Gishes. This interchange of delegations between the South and West has already resulted in a new feeling of unity in the camellia community of the country.

Camellia people don't always realize the importance of keeping potted camellias growing steadily. They should never be allowed to stagnate or stand still at the time of year when they should be growing. Growth, that is, vigorous growth, is a sign of health and a camellia plant that puts out only two or three new leaves in a season is definitely on the down-grade. It is especially important that seedlings intended for understock should be kept growing normally from the time they first come up until they are cut off for grafting. This can only be done if the roots have, at all times, ample room to expand and suitable soil to expand in. Quite a good many growers are now transplanting seedlings from the original flats into gallon cans without putting them first into medium sized cans; they are then kept in these gallon cans until they bloom, or until used as understock. This means only one transplanting for each. A healthy understock with good "pushing power" will not only produce a better grafted plant but will be less subject to fungus, disease, insects, lack of water, or any other hazard which may beset it.

The disbudding season will soon be here, but don't begin to disbud too early, for this may be an invitation to the plant to put out more buds to replace those taken off. Certain camellias need not be disbudded at all, such as sasanquas, camellias in hedges, yard plants where a show of color is desired rather than large, individual blooms. On the other hand it is unwise to wait too long to disbud, for this may be a strain on the plant's food and water supply. Let's say, roughly, that perhaps the ideal time to disbud is about a month before the plant opens its flowers, but certainly not any later. Actually, disbudding is not done only for size; by allowing sufficient space for each flower to open unhindered, one gets perfect form as well.