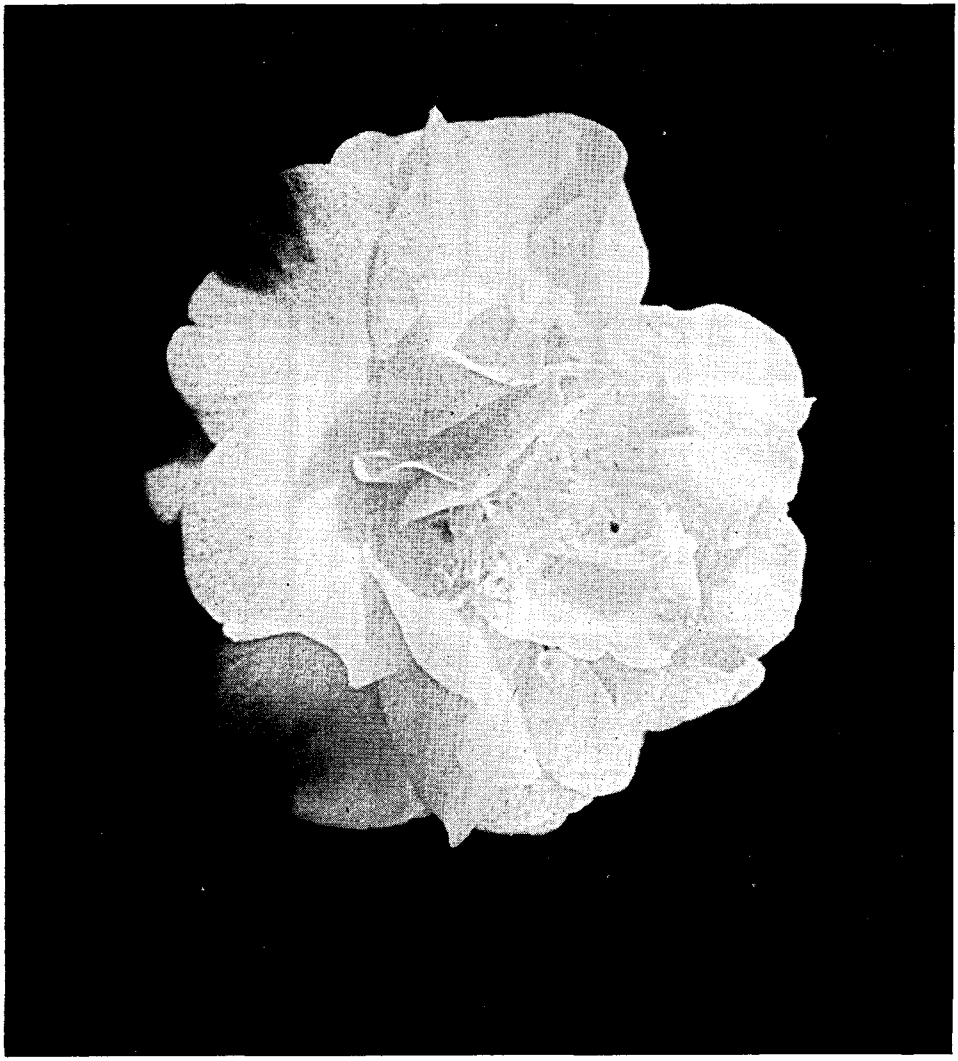
Northern California Camellia Society, Inc.

A Non-Profit Organization

Vol. 7, No. 1 **OFFICIAL BULLETIN** October, 1953



Camellia japonica

Thelma Dale

Photograph: Courtesy Barlow Hollingshead

NORTHERN CALIFORNIA CAMELLIA SOCIETY, INC.

ROSTER OF OFFICERS

PRESIDENT:
C. W. Lattin (TR 2-2120)
2246 83rd Ave., Oakland

VICE-PRESIDENT:
Wallace H. Brown (OL 2-5404)
201 The Uplands, Berkeley 5

TREASURER:
Woodford Harrison (LA 4-4671)
910 Oxford St., Berkeley

SECRETARY:
C. A. Roberts
2851 Johnson Ave., Alameda

DIRECTORS:
D. L. Feathers (Orinda 2171)
1 Camellia Lane, Lafayette 1
Walter N. Powell (OL 3-1586)
423 60th St., Oakland 9
Mrs. Herbert Teachout (Orinda 2028)
23 Acacia Drive, Orinda

COMMITTEE CHAIRMEN:

BULLETIN EDITOR:
Mrs. Barlow Hollingshead (Orinda 2054)
12 La Cintilla Ave., Orinda

ARRANGEMENTS:
Mrs. Herbert Teachout (Orinda 2028)
23 Acacia Drive, Orinda

BLOOM DISPLAY:
Mr. Lee B. Sutliff
12 Menlo Place, Berkeley

MEMBERSHIP:
Walter N. Powell (OL 3-1586)
423 60th St., Oakland 9

QUESTION PERIOD:
D. L. Feathers (Orinda 2171)
1 Camellia Lane, Lafayette

RECEPTION:
John Paul Edwards (GL 1-1854)
1347 Trestle Glen Road, Oakland 10

BOOK SALES:
Mrs. Lenore Broze (HU 3-9668)
6100 Harwood Ave., Oakland 18

HOSTESS:
Mrs. Louise Lattin (TR 2-2120)
2246 83rd Ave., Oakland

LAKESIDE CAMELLIA GARDENS:
O. E. Hopfer (AN 1-5737)
1872 Brentwood Road, Oakland 2

HORTICULTURAL RESEARCH:
H. L. Paige (Lafayette 3408)
1212 Monticello Road, Lafayette

PUBLIC ADDRESS SYSTEM:
David B. Grigsby
2218 Jefferson Ave., Berkeley

SERGEANT-AT-ARMS:
C. A. Andrews
449 Hillcrest Road, San Mateo

The Northern California Camellia Society, Inc. is a non-profit organization of camellia fanciers interested in the culture, propagation, and development of camellias. Meetings are held on the first Monday in each month from November to May inclusive, at 8 p.m., at the Chabot School Auditorium, Oakland. Membership is open to all those with a serious interest in the subject. Annual Dues $5.00. Membership application blanks may be obtained from C. A. Roberts, 2851 Johnson Avenue, Alameda.

Published by the Northern California Camellia Society, Inc.

Copyright, 1954

COVER FLOWER

Camellia japonica THELMA DALE—Large incomplete double, large rounded phlox-pink upstanding and folded petals penciled with deeper pink at edges, interspersed with stamens, lending depth to flower form. One of the finest camellias. A mutation of Mrs. Baldwin Wood with same distinctive flower form. Midseason bloomer. Upright, vigorous growth.

GRACIOUS LADY OF ROSEBUD FARM

By Evelyn F. Hollingshead, Ph.D.

The camellia world has lost a dear friend in the passing of Mrs. Mary Edinger of Hood, California, on August 9, 1953, at the age of 87.

Many years ago Mrs. Edinger's father, the late Mr. William Johnston, planted three camellias on the northwest side of their home at Hood, which are now thought to be the largest in the United States. They are Wakanoura, 27' tall, with a 38' spread and a circumference of 39½"; Purity, 31' tall, with a 22' spread and a circumference of 31½"; and Pink Perfection, 28' tall, with a 22' spread and a circumference of 37". (These were the dimensions in 1949.)

Through the years Mrs. Edinger originated many seedlings, some of which are nationally-known named varieties, including Arrabella (named for her sister), Anne Lindbergh, and Mrs. William Beckman. Other seedlings are Favorite (the favorite of her late husband), Captain Jack (named for her son), Dorothy Edinger (named for her daughter-in-law), Mrs. Edinger, Barbara E. (named for Barbara Edinger), Scarlet Perfection, Martha Washington, Lady Astor, Lady Wheeler, and Christmas Tree (the Chinese house boy insisted that when in bloom it resembled a Christmas tree).

Pride of Rosebud Farm is a nationally-known named sport, a mutation of the original Wakanoura, first propagated commercially by Mr. George Peterson of Lindo Nursery, Chico, California, who cut the scion from Mrs. Edinger's tree. This sport has erroneously been spoken of as a seedling in camellia literature.

In the December 1949 issue of the NCCS Bulletin, your editor wrote an article entitled "Gracious Lady of Rosebud Farm." The story was illustrated by the above photograph of Mrs. Edinger, taken by Herbert V. Mitchell on March 6, 1949, during the

(Continued on page 7)

PLANT HORTICULTURE AS APPLIED TO CAMELLIAS

By Robert M. Hoffman, Farm Adviser, Tehama County, Red Bluff, Calif.

The first camellia to come to New York, in July of 1800, was C. japonica Alba Plena. From that point the plant was distributed commercially up and down the East coast. The first record of the camellia coming to California was on February 3, 1852; the plant had come by ship to the Isthmus, overland to the Pacific, and by boat to Sacramento.

The camellia belongs to the Ternstroemiaceae family, commonly known as the Tea family. Deciduous members of this family are franklinia, gordonia, and stewartia. Evergreen members are C. cuspidata, C. hongkongensis, C. japonica, C. maliflora, C. oleifera, C. reticulata, C. saluenensis, C. sasanqua, and C. sinensis.

Horticultural literature informs us that the native soils of the mountainsides of Yunan Province, China, where the camellia first became known to the Western world, are slightly acid. In that belt you would find much rainfall during the cool winters, moderate temperatures in summer, moisture, and an abundance of humus. The decomposition of leaves and wood results in porous soils, somewhat acid, permitting drainage, yet retaining sufficient moisture. Climate too plays an important role in affecting the value of soils. Freezing, thawing, sun, rain, bleaching—all have an influence. An attempt has been made in America to duplicate these conditions for the growing of camellias.

The soils that we have to work with are 1) clays, 2) sand, 3) loams. The clays are a very fine-particled soil, capable of holding only a small amount of water available to plants. On the other end of the scale are sands, large-particled and holding only a minute quantity of water available to plants. The loams, possibly a combination of both, are most desirable. Within these brackets are many different sub-brackets. Different elements vary with different pH readings. Many combinations may be had over this state and possibly over the world, originating from a certain type of rock, volcanic ash, or soil deficient in sulfur. Those soils moved down, and with the addition of sulfur, there is a great response. Many different elements are found lacking in California soils. In some fruit areas: boron, copper, sodium. Nitrogen is an element that has been with us a long time—the most important element in soil and an element which can be replaced. Nitrogen is in the air; orchids derive their nitrogen from the air.

Many articles have been written pointing out the hazards of planting camellias in certain soils. However, the limiting factors such as climate, soil, temperature, and so forth, may be regulated so they should be considered unimportant. I believe that there would be no soils in California in which you could not grow camellias, provided a large enough hole is dug and a proper mixture of soil is supplied. Heavy soils, such as adobe and clay, may be improved with certain organic materials such as manure, peat, and to some extent such materials as Krilium. Native sands may be improved by the addition of loams, manures, peat and any form of organic matter. Loam itself many times is a sandy loam which should have some organic materials added to improve its water-holding capacity, as well as to improve the texture and to provide plant food.

These soils may be acid, neutral, or alkaline. Chemists measure these soils by a pH rating graduated from 0 to 14, 7 being the neutral point. From 0 to 7 is acid; 7 to 14 alkaline. Good camellia soils vary between 4.5 and 6.5.

(Continued on page 14)

CAMELLIAS AND THE WEATHER

By John D. Lawson, M.D., Sacramento, California

Much has been written about the various influences which govern growth and bloom of the camellia. Most articles deal with fertilization, drainage, mulching, grafting and other subjects. However, it does not appear to me that the matter of climate, or weather if you prefer, has received the attention it deserves.

In America the camellia grown in the open thrives in a number of the southern states and in certain locations in California and Oregon. These areas have a diversity of climatic conditions. In the southern states there are hot, humid summers and frequently cold, freezing winters. In the San Francisco Bay area there are cool summers and relatively warm winters. In the Southern California area and central valleys of California from which this article emanates we have extremely dry, hot summers and, in the valleys, a relatively cold, wet winter. Temperatures in the Oregon areas, where camellias grow well, are similar to those in the inland valleys of California except that the rainfall is much greater and the humidity during the summer is higher.

In the central valleys of California we have maximum temperatures in the summer time reaching 110°; during June, July and August we average six days in which the temperature goes above 100° and forty-eight days in which it exceeds 90°. These high temperatures are accompanied by very low humidity which varies between ten and twenty-five percent. The winter temperature rarely goes below 20°, and during the year we average eight days when the freezing point or below is reached. We have no losses attributable to excessively cold winters. The following schedule shows the high and low averages as given by the United States Weather Bureau for Sacramento:

	Mean High	Mean Low
January	52	39
February	58	43
March	64	45
April	70	48
May	76	52
June	84	56
July	90	58
August	89	58
September	85	56
October	75	51
November	64	44
December	53	40

Having no particular problem during the winter as to damage by cold or freezing, protection of our camellias during the summer months is our greatest concern. The average rainfall in the valleys varies from 25 inches per year in the northern portion to 8 inches in the southern portion. In Sacramento the yearly average is 17 inches. There is no rainfall during June, July, August and September, and frequently dry spells occur during other months. This year, for example, there was no rain for 43 consecutive days in January, February and March.

During the dry periods watering is a primary consideration since drying out of any plant will result either in death of the plant or in complete bud drop and defoliation. It sometimes requires two years to bring back a plant which has not succumbed but has been injured by lack of water. This is especially true of container culture. Due to the fact that such a large percentage of camellias in California are container grown, the water problem is accentuated. Practically no camellias are field grown at present time. About homes and gardens, of course, they are planted, but still the majority of collectors will have a high percentage of their plants in containers. The planted camellia is less critical as there is generally residual water in

the ground, but when a potted or tubbed camellia becomes dry, it's D-R-Y.

In spite of intense heat and low humidity we in Sacramento are able to grow camellias in full sun. Some of our old plants seventy-five and eighty years of age have never had any shade and have done well. In order to be successful in growing camellias in full sun there are three primary considerations. First, the presence of an ample water supply and care that they never become dry. Second, a proper mulch for the roots, as hot roots will mean loss of the plant. One inch of good mulch will reduce the temperature at the surface roots from 100° to 70° by actual test. Third, protection from reflection of white walls. This latter condition is encountered in home plantings where a camellia is placed within two or three feet of a white wall with resultant absolute destruction of foliage due to heat.

The low humidity which we have to consider can be ameliorated by overhead sprinkling as well as by ample water about the roots. The humidity percentage may be raised 30% to 40% by this means. We all know that the camellia enjoys having "its feathers wet."

We have observed that in those summers where there has been an unusually large number of hot days, the bud set is increased and the quality of the bloom is improved. Conversely, where the summer has been unusually cool there has been a diminution in quantity and quality of the blooms. Growth also is definitely stimulated by those hot days, and seedlings which I, personally, have kept in the glass house through the summer, where for a period of ninety days the temperature has reached 100° or more every day, have grown nearly twice as much and are much stronger than those which have been in semi-shade at cooler temperatures. Also the age at which the first seedling bloom may be expected is much less in the plants subjected to the greater heat.

The flower is also markedly affected by the temperature at the time of bloom. If, for any reason, there is a sudden warm spell during the flowering months, the quality of the bloom deteriorates. Our best blooms are those which are obtained at temperatures well under 50°.

The requirements of different varieties vary considerably. Some camellias do not appear to care much what the temperature is. Others however, are quite particular about climatic conditions. An example is Chandleri Elegans. This bloom in the valley where the temperature is high in the summertime is at its best, while in San Francisco where it rarely gets uncomfortably warm the bloom is about one-fourth the normal size, opening is poor and color is lacking. I have seen such a plant moved from Oakland (which has fogs), a distance of about three miles into the Orinda district where the temperature is similar to that of Sacramento. In one season the blooms changed from "little stinkers" to outstanding blossoms.

Even though all of the known requirements are met in the planting of camellias we occasionally find one which does not perform. These plants frequently can be moved to a different type of exposure or location and be made happy. I have moved plants as many as four times before they reached the location in the garden which was to their liking.

Most of our camellias are propagated in containers. Generally this is done under lath. With the idea of determining the degree of shade advisable I have three sections of lath. One is 60% shade, the second is 50% and the third 35%. The latter appears to be optimum as the bud set is better, the bloom better quality and the foliage cleaner. No sun burn has resulted.

(Continued on page 9)

SUPPLEMENTARY NOTES ON THE EFFECT OF CLIMATE ON CAMELLIAS

By David L. Feathers, Lafayette, California

At the suggestion of the editors of the American Camellia Society Yearbook for 1953, I prepared an article entitled "Effect on Camellias of Environmental Differences," and quoted verbatim a paper prepared under NCCS auspices. It seems only fair that the tables be turned. Accordingly there is reproduced on page 13 a tabulation included in the yearbook article.

There was an attempt to define and explain the rather wide differences in results in growing camellias in different sections of the San Francisco Bay Area. In the tabulation there is a comparison of temperature and relative humidity in San Francisco, Oakland, Lafayette — located progressively inland. The farther inland, the warmer the climate in summer and the colder in winter. In view of this writer's conclusions as to the reason for better results—the greater range or fluctuation in temperature summer to winter —the year was divided into halves broadly designed as "Warm Months" (Growing Season) and "Cold Months" (Blooming Season), and the averages for each locality were computed accordingly.

The conclusion finally drawn, based upon personal experience in growing camellias in two of the three localities, was that in all probability there were —besides the prime factor of greater warmth for flower-bud development —other contributing factors such as temperature range, abundance of rainfall, and the quality of the water supply during the dry season.

The "adjustment factors" referred to in the tabulation are an arbitrary 4% deducted from the official temperature figures for San Francisco warmth and 4% added to Oakland's warmth, in an attempt to adjust for the fact that the readings taken at the Weather Bureau stations in those cities are not deemed typical of the average residential areas in which camellias are grown. The adjustment has been applied only to the totals, the monthly figures being those officially reported.

In Oakland the camellia blooming season begins about November and extends through May. In Lafayette there is a lag of about a month. It would, therefore, be impossible to make exact comparisons between the respective temperatures during the growing and blooming seasons. Moreover, individual environments have a bearing on this factor. Broadly speaking the segregation into "Warm Months" and "Cold Months" approximately coincide with these seasons on an overall basis. (Turn to page 13.)

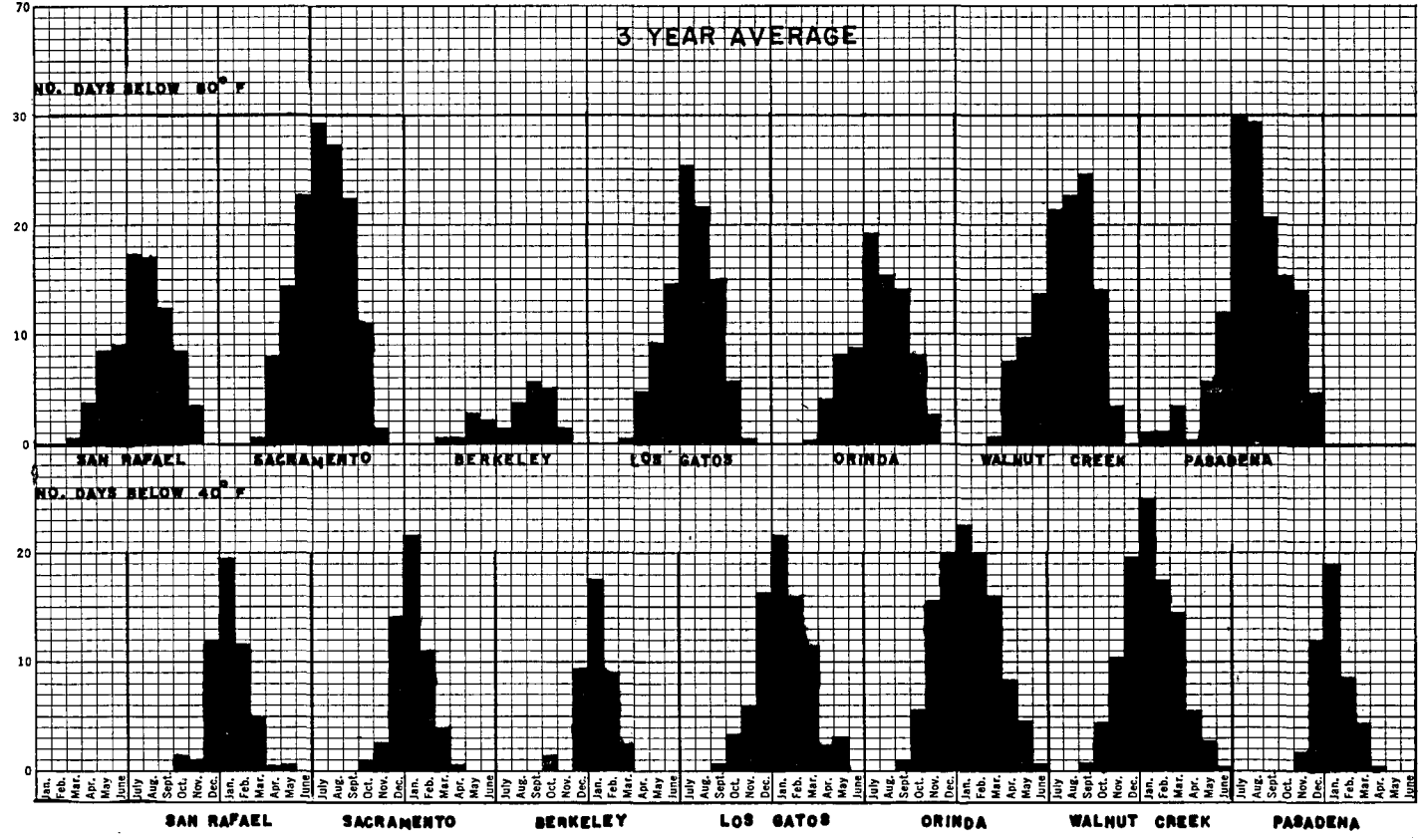
GRACIOUS LADY—

(Continued from page 3)

tour of the American Camellia Society, conducted by Jerry Olrich, the State Gardener. It was indeed gratifying to her that so many of the visiting camellia celebrities admired her seedlings — especially Arrabella which was her favorite.

In the 1950 Year Book of the American Camellia Society, Herbert V. Mitchell contributed an article entitled, "The Gracious Lady and Rosebud Farm," accompanied by pictures taken on the camellia tour. The ACS editor comments that these pictures "may make one think of this little lady as a piece of rare and delicate porcelain to be treasured for generations."

Mrs. Edinger made an outstanding contribution to the camellia world through her pioneering in the growing, development and introduction of many fine seedlings. She will always be remembered as the "Gracious Lady of Rosebud Farm."



Comparison between the number of days each month when the maximum temperature was above 80° F. and the number of days each month when the minimum temperature was below 40° F. (based on 3-year averages for the period 1948-1950). Erratum: "No. Days Below 80° F." in the above chart should read "No. Days Above 80° F."

EFFECTS OF SUMMER TEMPERATURES ON CAMELLIAS

By Gordon W. Richmond, M.D., Chairman
Committee on Plant Experimentation

Why is it that people living on the east side of the Berkeley hills away from the bay, in eastern Contra Costa County, or down the peninsual in San Mateo County, produce larger and better camellia flowers than on the west side of the Berkeley hills toward the bay? Obviously, the answer to this question is the reason why Dave Feathers, Dr. Fred E. Heitman, and Harold L. Paige moved to eastern Contra Costa County. It can't be the water, or the soil, or the fertilizer, because these conditions can easily be duplicated. So it probably is the climate.

On the basis of this assumption I collected climatological data on Berkeley, situated on the west side of the hills, and on Walnut Creek, situated on the east side of the hills, as well as on Orinda, San Rafael, Los Gatos, Sacramento and Pasadena, where camellias are grown, to see whether any conclusions could be drawn.

The figure on page 8 shows a comparison between the number of days each month when the maximum temperature was above 80 degrees F. and the number of days each month when the minimum temperature was below 40 degrees F. (based on 3-year averages for the period 1948-1950) for the seven localities.

Note that the January-February-March highs are quite similar for Berkeley and Walnut Creek, but the lows are much lower in the latter locality. Lower temperatures during the blooming season permit the flowers to develop more slowly and attain greater size and substance. In warm weather the buds open rapidly and the flowers are small.

The figures on page 10 and 11 are comparative temperature curves (high and low respectively) for Berkeley and for Walnut Creek. Note the spread for Walnut Creek and compare with Berkeley. Also note the marked dip for Walnut Creek as compared to Berkeley. Compare the high temperatures during July, August and September when the flower buds are developing. The Walnut Creek area experiences the highest maximum temperatures, which are conducive to flower-bud formation. Could this be the reason the Stoeckles et al from the Walnut Creek area have walked

---

CAMELLIAS AND THE WEATHER—

(Continued from page 6)

The date of blooming is definitely affected by summer temperature. After an unusually hot summer "September Morn" bloomed before the first of September. The following summer was quite cool and no bloom developed until October 15th. The same pattern was followed by most of the plants although not to such a marked degree.

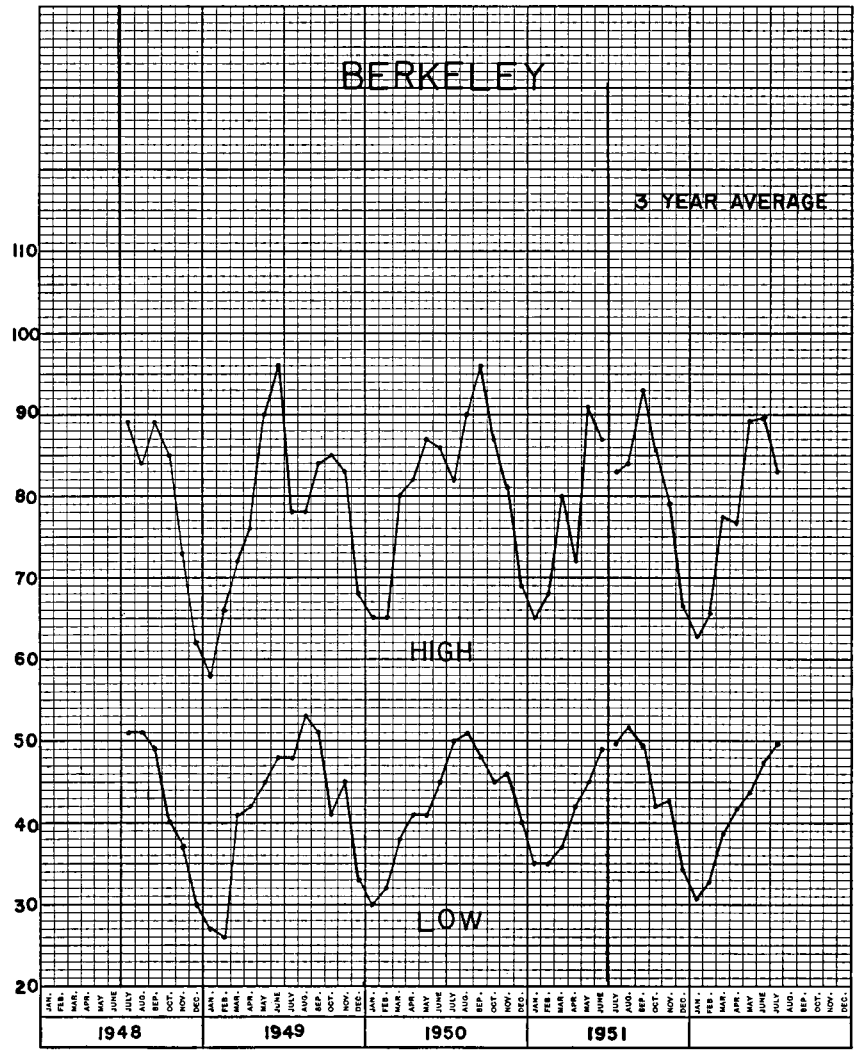
In selecting camellias one should bear in mind the weather pattern of his own locality as a camellia which blooms too early (in hot weather) or too late (in hot weather) is not desirable. On June 15th, I saw many blooms on Warratah all withered and wilted . . . temperature, 94°, humidity, 15%.

I quite appreciate that much that I have presented will not be applicable to many of the readers of this article, yet the basis of camellia growing is the same wherever you may be. Analyze your weather, or lack of it; analyze your camellias. Try to get them together by adjustment of either or both.

away with Sweepstakes every time they've entered their blooms?

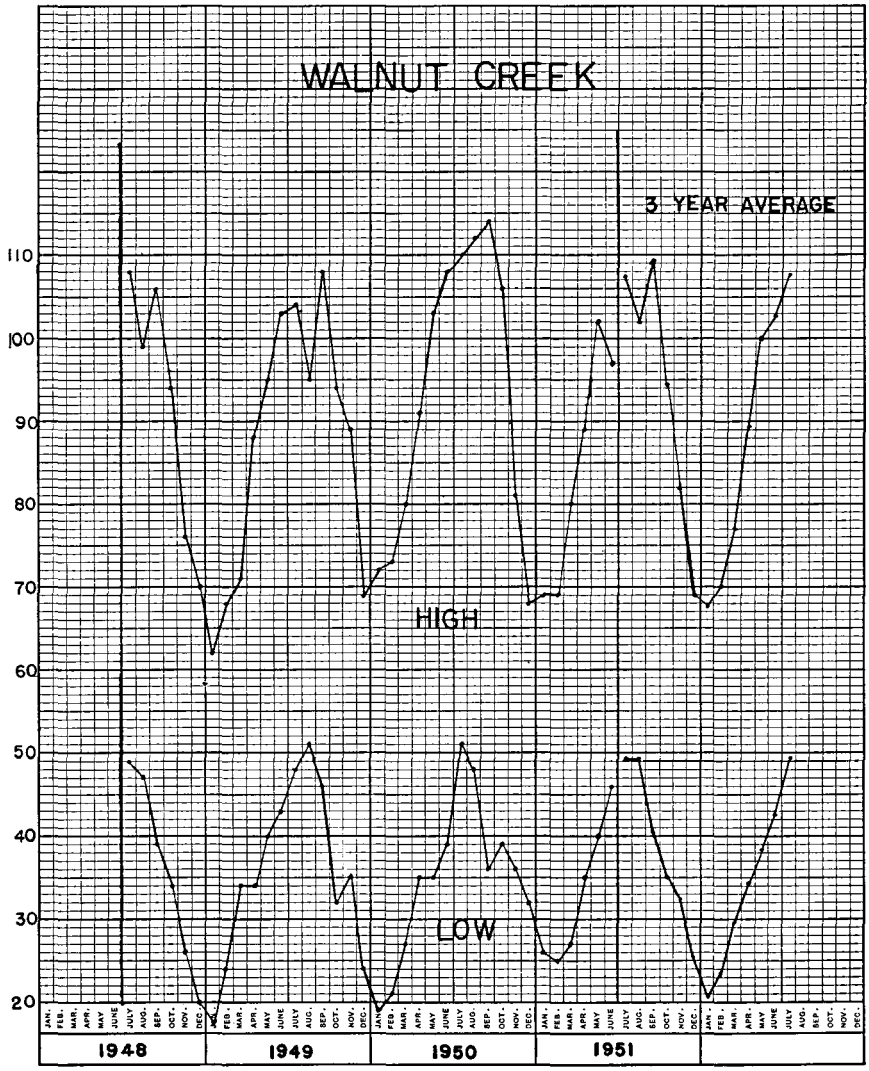
The figure on page 12 is a daily high and low temperature chart for the year 1949 for Berkeley and for Walnut Creek. Note that in Berkeley the hot weather came after the summer—the flower buds were already formed and developed. In Walnut Creek high temperatures came during the summer to aid in flower-bud development.

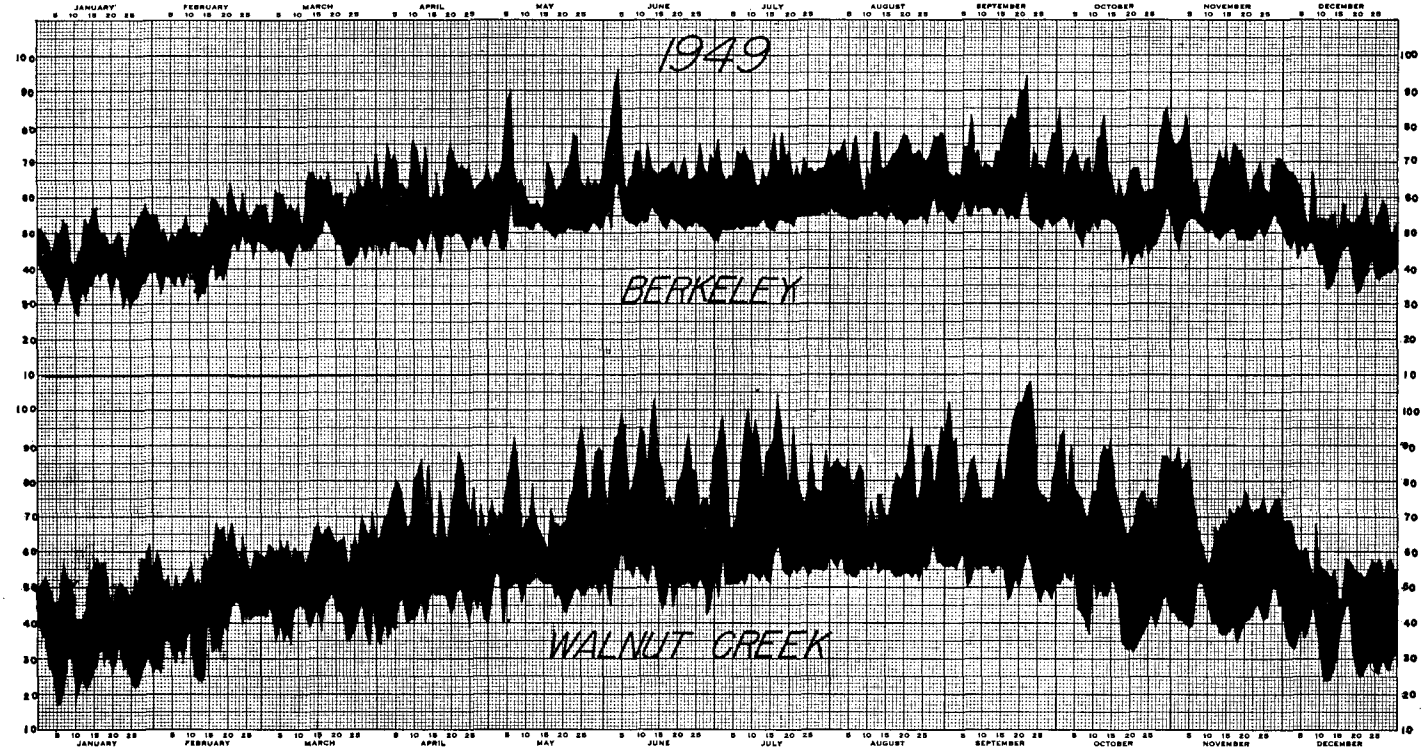
The following varieties have been found quite satisfactory in the cooler parts of the East Bay. Months of more or less foggy summer weather seem to have little effect in cutting down flower production: Alba Plena, Fimbriata, Rosary, Gov. Earl Warren, C. M. Hovey (Col. Firey), Te Deum,



Lotus, Finlandia, Donckelari, Adolphe Audusson, Flame, Kumasaka, Lady Clare, Debutante, Glen 40, Triphosa, Pax, Daikagura group, Blood of China.

The following varieties have been found to require much higher summer temperatures than usually prevail near the San Francisco Bay. We suggest that they be avoided unless the grower is willing to accept mediocre performance. These varieties are better suited to the higher temperatures of San Leandro and the interior valleys of Contra Costa County: Colletii, Gigantea family, Pink Perfection, Lindsey Neill, Marchioness of Salisbury, Paeoniaeflora, Mrs. Charles Cobb, St. Andre, Fred Sander (Fimbriata Superba).





Daily high and low temperature chart for the year 1949 for Berkeley and for Walnut Creek.

STATISTICAL DATA ON AVERAGE TEMPERATURES AND HUMIDITY OF DIFFERENT LOCALITIES IN THE SAN FRANCISCO BAY AREA

(relative humidity readings at 4:30 a.m. and p.m. unless otherwise indicated)

Monthly Basis	SAN FRANCISCO Temperature High	Temperature Low	Humidity High	Humidity Low	OAKLAND Temperature High	Temperature Low	Humidity High	Humidity Low	LAFAYETTE Temperature High	Temperature Low	Humidity
May, 1952	62.8°	50.4°	79%	÷62%	66.2°	49.2°	82%	52%	67.9°	45.3°	
June "	64.3	51.2	83	+66	69.6	52.2	85	56	75.	49.	
July "	63.0	53.4	93	÷81	72.5	56.4	87	60	83.	53.	
August "	63.6	52.1	94	70	71.9	53.9	87	60	83.6	51.6	
Sept. "	÷69.2	53.8	92	67	÷76.6	55.6	86	57	÷87.6	52.8	
Oct. "	64.8	52.7	93	78	68.7	52.8	90	70	77.	50.6	
AVERAGE— WARM MONTHS:	64.8°	52.3°	77.5%		70.9°	53.4°	70.2%		79.°	50.4°	33%
Nov., 1952	62.6°	49.2°	87%	61%	63.1°	42.7°	84%	62%	64.2°	40.3°	
Dec. "	55.8	47.4	89	77	55.5	44.3	91	77	54.6	40.3	
Jan., 1953	59.3	49.4	91	79	59.6	45.6	93	77	58.2	41.3	
Feb. "	60.7	47.3	81	÷65	60.3	=41.3	‡76	58	62.6	=38.1	
March "	59.9	=46.5	81	÷59	62.2	42.5	86	57	61.8	40.	
April "	58.3	47.1	84	÷69	62.1	46.5	86	65	68.5	41.3	
AVERAGE— COLD MONTHS:	59.4°	47.8°	75.4%		60.5°	43.8°	74.2%		61.7°	40.2°	40%

÷ at noon
+ highest monthly average
‡ at 10:30 p.m.
= lowest monthly average

ADJUSTMENT FACTORS: (WARM MONTHS, ONLY) San Francisco, minus 2.6°, Oakland plus 2.8°

ADJUSTED AVERAGES—			
WARM MONTHS	62.2° 52.3° = 9.9° range	73.7° 53.4° = 20.3° range	79. ° 50.4° = 28.6° range
COLD MONTHS	59.4° 47.8° = 11.6° "	60.5° 43.8° = 16.7° "	61.7° 40.2° = 21.5° "
YEARLY BASIS:	60.8° 50. ° = 10.8° "	67.1° 48.6° = 18.5° "	70.3° 45.3° = 25. ° "
AVERAGE RANGE (EXTREMES)—			
UNADJUSTED	69.2° 46.5° = 22.7° range	76.6° 41.3° = 35.3° range	87.6° 38.1° = 49.5° range
(ADJUSTED)	66.4° 46.5° = 19.9° "	79.7° 41.3° = 38.4° "	(no change) = 49.5° "

MONTH OF GREATEST TEMPERATURE FLUCTUATION:
September: 14.5° 21.° 34.8.°

MONTH OF GREATEST HUMIDITY FLUCTUATION:
September: 25% May: 30% (not available)

CAMELLIA SOCIETY OF SANTA CLARA COUNTY, INC.

The following were elected officers of the Camellia Society of Santa Clara County, Inc. to serve until April, 1954:

President: Anthony De Lorenzo, 570 Vine St., San Jose.

Vice-President and 1954 Show Chairman: Gordon V. Simpson, 1415 Hamilton Ave., San Jose.

Secretary-Treasurer: K. L. Boosey, 119 Cleaves Ave., San Jose.

HOLIDAY GREETINGS

Holiday greetings from Major and Mrs. Fred E. Heitman, 4925 Grand Ave., Fort Smith, Aakansas, bears the sad comment: "No Camellias here!"

PLANT HORTICULTURE—

(Continued from page 4)

Neutral or alkaline soils may be lowered in their pH by the different sulfurs or by aluminum sulphate. The amount necessary to lower the pH from 7 to 6 is 2 pounds sulfur per 100 square feet or 5 pounds aluminum sulphate per 100 square feet.

Camellias have been seen growing at a pH as high as 8 and as low as 4, but in both cases the plants were quite sick. Camellias show the same symptoms when the nitrates are exceptionally high. The pH of most city water supplies is usually on the alkaline side to prevent corrosion of pipe lines and also to make the water safe for human consumption. The pH of water is not always a guide as to its effect on soil. At different levels of pH many elements are released or tied up in the soil. A low pH releases aluminum and manganese which are toxic and leaching magnesium and calcium.

Dr. Walter Lammerts, formerly of Rancho del Descanso, La Canada, California, reports that plants died at a pH of 8. Plants survived at a pH of 7 but remained small. "Sarah Frost" died at 4.5. "Prince Albert" and "Rainy Sun" died at a pH of 3. All the camellia plants in between these pH values survived.

Daurnay in an article in the 1952 Camellia Yearbook of the American Camellia Society, entitled "Soils and Soil Treatment for Camellias," gives a pH range from 4.5 to 7.5 as safe levels for camellias:

Nitrates, 5 to 15 parts per million;
Phosphorous, ½ to 5 parts per million;
Calcium, 40 to 150 parts per million;
Magnesium, 5 to 10 parts per million;
Manganese, trace to 1 part per million;
Iron, trace to 10 parts per million;
Sodium chloride, up to 100 parts per million.

In areas where the soil is excessive in alkali or boron to the extent that such soil would kill the camellia, a larger than normal hole should be dug; with a sufficient amount of good mix around the roots the plant will survive. On the Davis Campus of the University of California there is a high content of boron. Camellias planted from containers into the soil die in a couple of years. But where a large hole is dug and soil with the proper pH is introduced, camellias thrive. That could be achieved wherever you are.

Possibly this belt, together with Oregon and Washington, is as good for camellia production as anywhere in the United States, although the camellia has been growing in California only 101 years.

This afternoon I had the pleasure of visiting the beautiful home and garden of the David L. Feathers' in Lafayette, California. On his grounds you find many soil conditions. Being a mining man and using old principles of mining, everything comes downhill — sandstone, leafmold, gravel, sand, loam. With good soil,

abundant rainfall, a warm summer and a cool winter—a chilling requirement to afford the camellia a deep rest during that period in order that it may fruit or blossom normally—the blooms achieve the perfection of those Mr. Feathers has on exhibit this evening. Without the chilling, the blooms would be small. Mr. Feathers is trying to duplicate the conditions the camellias have in the wild state: humus soil, overhead watering, ample sunlight and heavy mulching to keep the roots cool and to arrive at the proper acidity of the soid—pH 4.5 to 6.5.

There are several different amendments that may be added in varying amounts to any soil to bring it in line with the pH that is required:

Agricultural sulfur is generally used and could be added most any time of the year. By watering the material moves downward.

There are prepared fertilizers containing organic materials that are on the acid side: cotton seed meal or blood meal, which bring the soil to the acid reaction side.

There are a few basic elements demanded by camellias to a greater extent than others. A typical commercial fertilizer contains Nitrogen, Phosphorous, Potash in the ratio 6:9:6.

There are other elements of importance that are generally found in all soils; with an application of manure occasionally these elements would certainly be present. Manure and sulfur will provide a balanced diet for your plants. But manure is too bulky for plants in containers unless used in liquid form.

On my ranch at Lodi, California, I have camellias growing in the yard. These plants are quite young, yet are reaching up to the second story. The soil is about pH 6; the only amendments the soil has had are manure and sulfur. Manure is safer than concentrated fertilizers; you cannot apply manure in a way to cause damage to your camellia plants, but you can injure them with commercially prepared fertilizers if imprudently applied.

The camellia plant sometimes has two flushes of growth and flowers are borne at the terminals of the new growth. The floral parts are differentiated at least nine months prior to blooming. It is often said that unless one fertilizes at a certain time one won't have blooms, but usually those times are too late to affect the next crop.

If a camellia has been fertilized consistently for a number of years the manner in which the fertilizer is applied is important. I have applied elements in the form of ureas the year around and certainly have changed the appearance of plants. Urea applied at two-week intervals may be so high in nitrogen as to scorch the foliage, leaving a burn completely around the leaves, but the plant will outdo itself in growing. I had a camellia plant which changed completely from a productive cycle to a vegetative cycle. Why doesn't a fruit tree produce the first 4 or 5 years? For the same reason: it is on the vegetative side instead of the productive side. Nitrogen is the principal governing factor on the vegetative side. Carbohydrates are the principal governing factor on the production side. They have to be in balance. If the carbohydrates are out of balance the blooms may be the size of a 50c piece, and the plant may be sick or dying. Every bloom will set. There will be heavy production of fruit in its dying endeavor to perpetuate the species. The fact still remains, the camellia is not in a healthy condition if it is on the carbohydrate side. If the camellia is on the carbohydrate side there will be over-production, yellowing of leaves, sparse-looking growth, a sick plant. The same thing applies to camellias that are pot-bound. If you have a pot-bound plant, the simple solution would be to transplant the camellia.

To introduce nitrogen you might apply a material called Nugreen to

good advantage. It is a fast-working form of nitrogen. Camellias do respond, but not all plants equally well. In some instances the use of Nugreen at the rate of 5 lbs. per 100 gallons of water is satisfactory. I have applied it approximately 3 or 4 times; the leaf size doubled; the blooms were of much larger size than the check plants (providing of course the nitrogen level within the plant was not too high, for at such a level it would not set flower buds at all). It is possible to get beyond the point that is economcial. At all times the mixture should be balanced. A complete or balanced fertilizer would be a 6:9:6 combination, or low-percentage complete fertilizer.

Since there probably are a thousand or more varieties of camellias, you might wonder why anyone should want to breed more. Even with our most perfect varieties there are some characteristics which could be improved, such as color and fragrance. Wouldn't a yellow camellia be startling? As to fragrance, for a long time I did not think the aristocrat of flowers should have fragrance. Some people think a white camellia should smell like a gardenia, which has a very strong scent. I hope that if a fragrant camellia can be developed it will have a pleasant but not overpowering fragrance.

New varieties are sometimes obtained through chance pollination. There are controlled methods of attempting to find new varieties. In the controlled method, the male parts are removed and pollen from another camellia is introduced to the remaining female part. Then the bloom is covered to protect against insects or windblown pollen introduction.

Among other methods is radiation. Many people have used X-rays in an attempt to develop sports—merely a re-arrangement of the chromosomes.

Still another method is by the use of colchicin, which is not merely a re-arrangement of the chromosomes but a doubling of the chromosomes at the exact point of cell division. It could be the prevention of the formation of the cell wall at the point of division, resulting in a doubling of chromosomes. Due to that doubling the resultant camellia could be a monster or something with very small leaves. No one knows what the effect would be if the exact timing had taken place. A number of plants have been developed through the use of colchicin; for example, the tetrasnap which has greater size and new colorings. Colchicin is quite dangerous and should be handled with great caution; it is extremely poisonous to human beings.

It has been said that the camellia is dormant when it is blooming. I should like to change that statement and say that it is at the beginning of activity when it is blooming; if the plant was not active you would not have flowers. Immediately after the blooming period comes the first flush of growth which lasts possibly 4 to 6 weeks; there follows about 6 weeks cessation of growth, then the final growth in July and August.

It would seem that instead of waiting until the middle of the blooming period to move plants, the most desirable time would be before bloom since at that time the plant could handle shock more easily. Too, the weather would remain cool longer. By the time the plant becomes active — before pushing new growth — the roots would become established. Root growth starts about 4 weeks before activity on the upper part of the plant.

In setting out from containers, any time of year is good, providing that proper care is given after transplanting.

In closing I should like to say that it is through a society such as this that better plants may be produced and home gardening may be more successful. I think too that the society deserves praise for its work in connection with classification and nomenclature. Thank you very much.