

THE EFFECTS OF NATURAL COOLING AND REFRIGERATED STORAGE  
IN THE FALL, FOLLOWED BY VARIOUS PHOTOPERIODS AT  
THREE FORCING TEMPERATURES, ON THE GROWTH OF  
LILIUM LONGIFLORUM, VARIETIES GEORGIA AND ACE

By

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## CHAPTER I

### INTRODUCTION

Lilium longiflorum, an important flowering plant, is grown for both cut flowers and potted plants. Generally, plants with long stems and large blooms are preferred for cut flowers. Short plants usually are more desirable as potted plants. The height of lilies may be influenced in a number of ways, such as, varying the pre-cooling treatment, forcing temperature, photoperiod, light intensity, and watering method. Fertilizer practices and chemical growth retardants may also affect plant height.

The objectives of the study reported herein were to determine the effects of a natural cooling treatment, followed by various photoperiod treatments during forcing, on the growth and development of Lilium longiflorum, varieties Georgia and Ace.



## CHAPTER II

### LITERATURE REVIEW

Lilium longiflorum, Thunb. (White Trumpet Lily or Easter Lily) is the most valuable species of the Lilium genus (14). Bulbs are grown in nearly all parts of the Northern Hemisphere. Before 1940, most of the bulbs were grown in Japan and Bermuda. By 1957, however, the greatest concentrations of bulb production were in Oregon, California, and Washington (6, 19).

Lilium longiflorum, varieties Floridi, Georgia, Croft, Ace, and Giganteum may be grown either as cut flowers or potted plants (8, 14). Cut flowers usually are available year around, while potted plants are in demand primarily at Easter time.

The commercial florist has an old "rule of thumb" which says that lily buds should be visible in leaf cluster six weeks before Easter. In order to "make" Easter and still permit "hardening" the plants at a cooler temperature, the flower buds should be about 1/2 inch long five weeks before Easter, depending upon the variety and temperature used during forcing (16). Buds should be bending over two weeks before Easter if the night temperature of the greenhouse is maintained at 60° F.

Easter lily bulbs require a pre-cooling treatment of several weeks at temperatures between 31° and 50° F. before forcing in order to hasten flowering (25). Stuart (22) found that the length of time required for forcing decreased with increasing length of storage. A storage period of two weeks at any of the storage temperatures used (36°, 40°, 45°, 50°,

and 59° F.) had little effect on speed of flowering (21). However, four weeks' storage at temperatures ranging from 45° to 59° F. reduced the time to flowering by as much as three months.

The sizes of bulbs forced as pot plants generally are 7 to 8 inches (size 7/8) or 8 to 9 inches (size 8/9) in circumference (8). Recently the practice of grading lily bulbs by weight rather than circumference has evolved and is being used by some growers and brokers (1). An example of the grades for Ace lilies are as follows: Grade No. 100, "Super Jumbo" (size 10 and up); Grade No. 150, "Jumbo" (size 9/10); Grade No. 175, "Fancy" (New Grade); Grade No. 200, "Standard" (size 8/9); and Grade No. 250, "Commercial" (size 7/8).

Pre-cooled bulbs usually are planted immediately upon arrival (4, 11). If a delay in planting time occurs, the lily bulbs are generally held under refrigeration or in a cool place until they are potted so that the effect of the pre-cooling treatment is not lost. High temperature storage after a pre-cooling treatment often leads to a delay in flowering or, in some instances, causes "blindness" (no flower buds produced).

Excessive drying during the sorting and grading process tends to reduce both bud count and plant height (5, 22). When bulbs are stored at 31° F. in moist peat containing 30 to 50 per cent moisture, they may be stored for a long period without reducing the bud count (22). When early blooming plants are desired, the packing material should contain more moisture than when long storage at low temperature is planned (23). Stuart (24) in 1954 found that polyethylene plastic permits the use of a drier packing material with less hazard of damage from bulb rotting, rooting, sprouting, and desiccation.

Smith and Langhans (17, 18) found that the greatest accelerating effect of high temperature and the greatest retarding effect of low temperature, on the speed of development of lilies, was obtained between the time the plants were six inches tall and the first flower stage. They also found that these effects were particularly pronounced during the two weeks just preceding and the two weeks just following the time when flower buds first become visible.

When bulbs have been given proper storage temperature, they can be forced at 60° F. immediately (15). Some growers, however, prefer to start bulbs at a forcing temperature of 50° F. and then raise the temperature when the plant shows through the soil (9). When this is done at least two to three weeks longer are required for forcing. Plants forced continuously at 50° to 55° F. will be taller than those forced at 60° F.

Non pre-cooled bulbs produce plants that grow slowly, have many leaves, and short internodes (8).

Bulbs which are not pre-cooled are preferred on the West Coast where cool night temperatures prevail much of the time (8). The bulbs are potted in early October, placed outside in frames and brought into the greenhouse after Christmas. Lily bulbs handled in this manner usually have a greater number of buds and are relatively short. Kohl (7) found that plants which were potted October 10 at Los Angeles and placed outdoors in a partially shaded location, and subjected to an average minimum night temperature of 46.3° F. during the first third of their growing cycle, had fewer leaves than those grown at minimum night temperatures of 60° and 68° F. When the average minimum night temperature was 52.3° F. during the middle third of their growing cycle, the plants were shorter than those grown at minimum night temperatures of 60° and 68° F.

In an experiment in Mississippi "natural cooling" of Georgia Easter lilies was found to eliminate the need for refrigeration of the bulbs (2). Bulbs were potted September 3 and plunged to the rim in sawdust in a plastic house containing automatic heat that was set to come on when the temperature dropped to 30° F. A ventilating exhaust fan was turned on automatically when the temperature reached 40° F. One hundred days before Easter the thermostat was raised to a 60° F. minimum temperature and the ventilation fan reset to come on at 70° F. These conditions resulted in the production of plants which were short in height, with good foliage, uniform growth, and an excellent bud count.

Short plants have been produced at several temperatures by shortening the natural daylength with black cloth. Tall plants have been produced by lengthening the daylength with low intensity incandescent light. Flashing light was as effective as continuous light (19).

Post (14) in 1941 found that when normal daylight was extended by incandescent lighting flowering was hastened when the forcing temperature was below 65° F. However, the additional lighting had no effect on the time of flowering at temperatures of 65° F. or higher. The additional light also reduced the number of buds per plant. Laurie, et al, (8) reported that lighting lilies at night causes plants to stretch and to have weaker stems.

Height of lilies also is influenced by light intensity (15). Low light intensity, resulting from placing shade cloth along the sides of the benches produces taller plants than normal. Shade from crowding also results in stretching of the stems (8). Reducing the light intensity during forcing often results in bud blasting (13).



Smith and Langhans (17) in 1961 found that under longer photoperiods, stem elongation of Croft lilies was most pronounced during the three weeks preceding and two weeks following the visible bud stage. Periods of intermittent, or cyclic lighting (5, 10, 15, or 30 seconds per minute), from 10 p.m. to 2 a.m., resulted in height effects almost identical with the same period of continuous light. The short-day (9 hour) plants were only 19.2 inches tall at maturity. Those given supplementary light were from 25.2 to 26.0 inches tall.

Lilies carried extremely dry will often be shorter than those grown in moist soil (8). Smith and Langhans (17) in 1961 reported water deficiency is apt to produce blasted buds in Easter lilies. Adequate water is extremely important one to two weeks prior to, and one to two weeks after the time flower buds become visible. At this stage a sudden moisture deficit will cause greater damage to the lily plant than a continuous moisture deficit imposed from planting onward.

Height has been reduced in lilies by the use of chemicals. Phosfon, a growth retardant, applied as a soil amendment at potting time or as a soil drench during forcing markedly reduced the height of Georgia lilies (12, 25). Martin (10) in 1961 found that gibberellic acid, alone or in combination with 3-indoleacetic acid, had no appreciable effect on time of flowering and plant height of Ace lilies.

Sudden shifts in temperature from 50° F. to 60°-65° F. four weeks before maturity, may cause blasted buds to be produced (3).

Stuart (21) in 1943 found that bloom size was affected by the number of days to blooming and by the number of blooms per plant. The largest blooms were on plants requiring the fewest number of days to bloom and those having the fewest flowers per plant.

If the lily matures too early, plants can be moved to a 45° or 50° F. dark storage when the first buds are in the white puffy stage (8). Smith and Langhans (17) found that plants can be stored at 31° F. for 10 to 14 days without damage provided they are placed in storage when the earliest flower bud is swollen.

## CHAPTER III

### MATERIALS AND METHODS

An experiment was conducted during the fall and winter of 1961-62 at Stillwater, Oklahoma, to determine the effects of "natural cooling", followed by various photoperiods and forcing temperatures, on the growth and development of two varieties of Lilium longiflorum, Georgia and Ace. Number of days from start of forcing and from first visible bud appearance to flowering, plant height, total number of buds and number of aborted buds per plant, and flower size (diameter and length) in inches were recorded per plant at maturity<sup>1</sup> for each of the treatments.

Natural cooling, to a minimum temperature of approximately 35° F., was obtained by building a frame house (Figure 1) and covering it with a double six-mil polyethylene plastic. The house contained a manually controlled steam line which was opened when necessary to prevent the temperature in the house from dropping below 35° F. Side panels were removed from the plastic house when the temperature rose above 50° F.

Georgia lily bulbs<sup>2</sup>, 5 to 6 inches in circumference, were potted August 24 in six-inch standard clay pots. "Standard" weight graded Ace lily bulbs<sup>3</sup> were potted October 31 in six-inch cyclomen clay pots. Neither of the varieties had been pre-cooled before potting. A soil

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<sup>1</sup>Date that 50 percent of the buds per plant were opened.

<sup>2</sup>Donated by Harson Growers, P. O. Box 65, Wiggins, Mississippi.

<sup>3</sup>Purchased from Geo. J. Ball, Inc., West Chicago, Illinois.

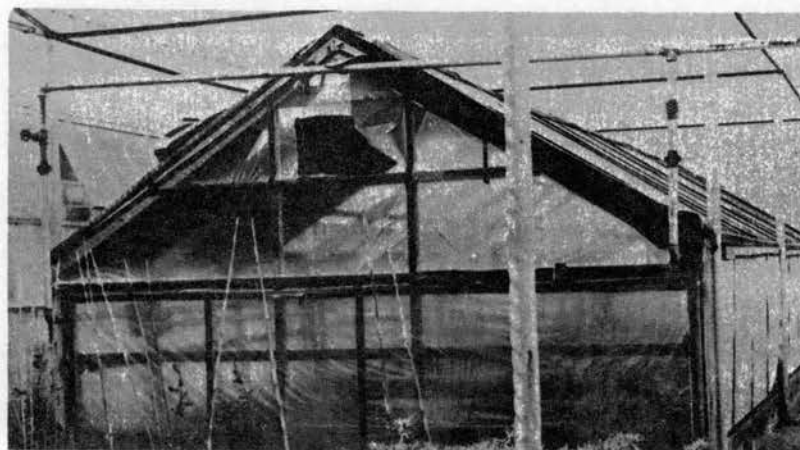


Figure 1. Frame house covered with double six-mil polyethylene plastic used for the natural cooling of Georgia and Ace lillies during the fall and winter of 1961-62 at Stillwater, Oklahoma.



mixture containing 2 parts soil, 1 part sand, 1 part peat moss, and 1 part well-rotted manure, plus 45 grams hydrated lime per cubic foot of soil mixture, was used for potting of the lily bulbs.

The potted Georgia bulbs were placed, pot to pot, on raised, sand filled benches in the greenhouse for two weeks after potting. The temperature inside the greenhouse was approximately the same as the outdoor temperature. All of the Georgia lily pots were placed, pot to pot, on 1" x 4" x 4" wooden blocks on the floor of the open frame house on September 7. Sixteen of the potted Georgia bulbs were placed on benches in each of the 50° and 60° F. greenhouses on September 20, as greenhouse checks. The frame house was covered with double six-mil polyethylene plastic October 10. Normal day<sup>4</sup> conditions were maintained on the plants in the plastic house and on greenhouse checks.

Potted Ace lily bulbs were placed in the plastic house immediately after potting, October 31. Sixteen potted Ace bulbs also were placed in each of the 50° and 60° F. greenhouses on the same date, as greenhouse checks.

On October 31, 32 of the potted Georgia plants from the plastic house and 32 of the potted Ace bulbs were placed, pot to pot, in a 40° F. refrigerated storage. A 12-hour photoperiod, 7 a.m. to 7 p.m., was maintained in the storage by the use of two 100-watt bulbs placed two feet above the pots. On November 2, 32 Georgia and 32 Ace lily pots were removed from the plastic house and set, pot to pot on 1" x 4" x 4" wooden blocks, under an open lath house. These received no other protection from the weather.

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<sup>4</sup>No supplemental light added.

The forcing period was begun January 9 when 16 of each variety, Georgia and Ace, were given the treatments described in Table I (See Appendix). Pots were spaced at 9 x 10 inch centers on the greenhouse benches.

Water was supplied throughout the cooling treatment and forcing period when needed. Alternating applications of 20-20-20 and 33-0-0 fertilizer solution were applied during the cooling treatment and forcing period as indicated in Table II (See Appendix). Fertilizer was applied only to those pots in which the plants were at least two inches tall.

## CHAPTER IV

### RESULTS

The minimum, maximum, and average daily temperatures which occurred in the plastic frame house during the period of natural cooling, October 1 to January 9, are shown in Figure 2. In general, there were reductions in the temperatures as the season progressed, with the highest temperature recorded being 96° F. and the lowest 33° F.

A summary of the number of hours of various temperatures which occurred in the plastic frame house during the period of natural cooling is shown in Table III (See Appendix). There was a total of 1,294 hours during which the temperature registered 50° F. or less. Several weeks of temperatures from 31° to 50° F. usually are recommended for cooling of Georgia lily bulbs prior to forcing (25).

On December 12, the temperature in the lath house dropped to 14° F. During the three subsequent days the maximum temperature reached was 30° F. As a result of these low temperatures, which were accompanied by freezing rain, sleet and snow, the plants in the lath house (treatment E) were frozen. There was no recovery or subsequent growth from them.

The number of days from start of forcing to bloom of Georgia lilies is shown in Table IV (See Appendix). The plants forced in the 50° F. greenhouse required approximately two to three weeks longer to reach maturity than those forced in the 60° F. greenhouse.

Temperature (° F.)

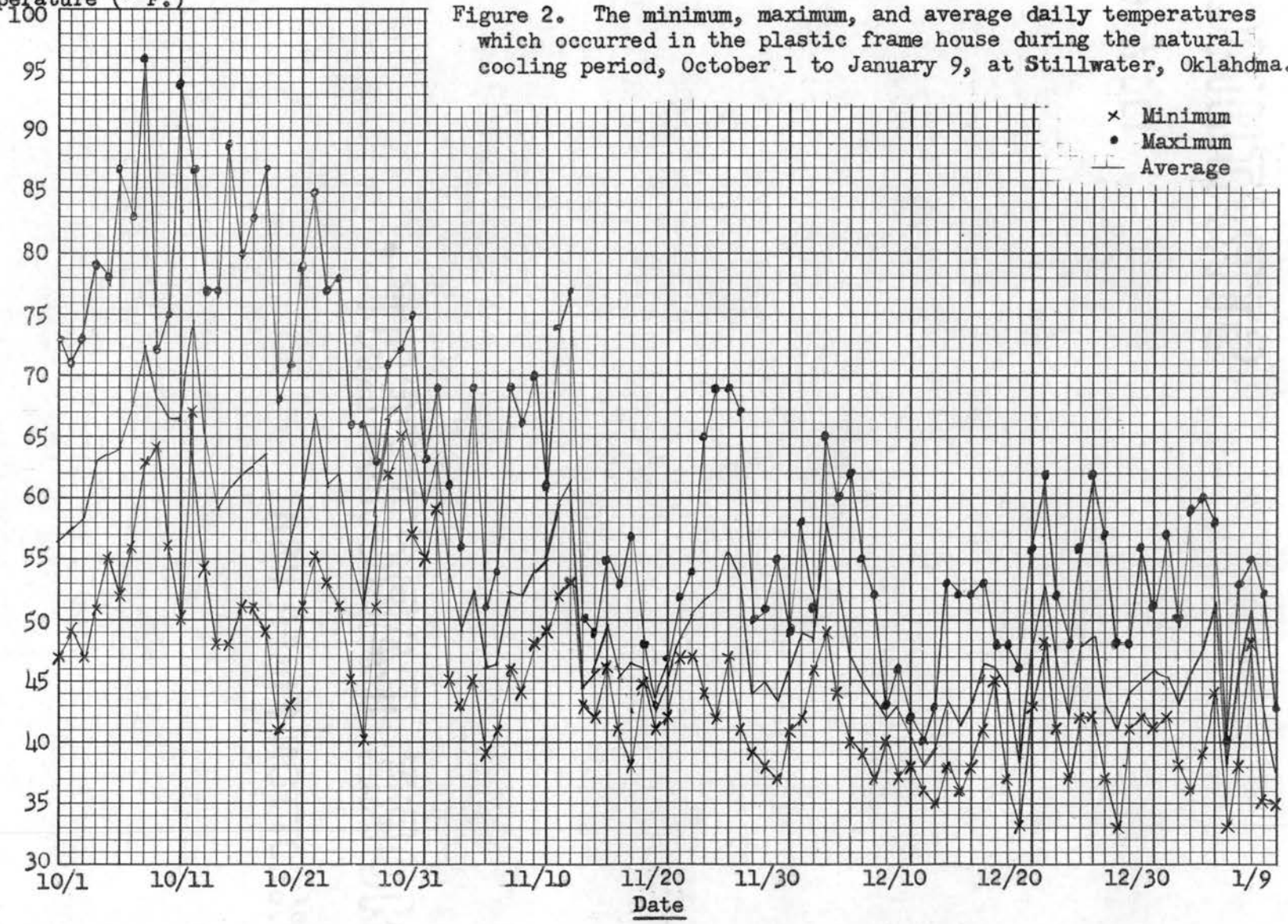


Figure 2. The minimum, maximum, and average daily temperatures which occurred in the plastic frame house during the natural cooling period, October 1 to January 9, at Stillwater, Oklahoma.

Table V (See Appendix) shows the number of days from first visible bud appearance to maturity of Georgia lilies. Lilies grown at 60° F. required three to four days less from visible bud appearance to maturity than those grown at 50° F. The lilies finished in the 70° F. greenhouse required approximately two weeks less to reach maturity than those in the 50° or 60° F. greenhouses.

The effects of natural cooling and refrigerated storage, followed by various photoperiodic conditions in 50° and 60° F. forcing greenhouses, on the average height of Georgia lilies are shown in Figure 3 and Table VI (See Appendix). The shortest finished lilies were obtained with the natural cooling treatment, followed by the short day photoperiod during forcing. The natural cooling treatment, followed by cyclic lighting during forcing, produced the tallest plants. In general, somewhat shorter plants were produced at 60° F.

The data in Table VII (See Appendix) show the effects of two cooling treatments, followed by various photoperiodic conditions in 50° and 60° F. forcing greenhouses, on the average total number of buds per plant of Georgia lilies. Plants forced at 50° F. averaged slightly more buds per plant than those forced at 60° F. There were markedly fewer buds on plants from the refrigerated storage than those subjected to natural cooling conditions.

The average total number of aborted buds per plant of Georgia lilies is shown in Table VIII (See Appendix). There was little difference in the number of aborted buds per plant between the 50° and 60° F. forcing greenhouses; however, there tended to be a greater number of aborted buds in the plants which were finished in the 70° F. greenhouse.

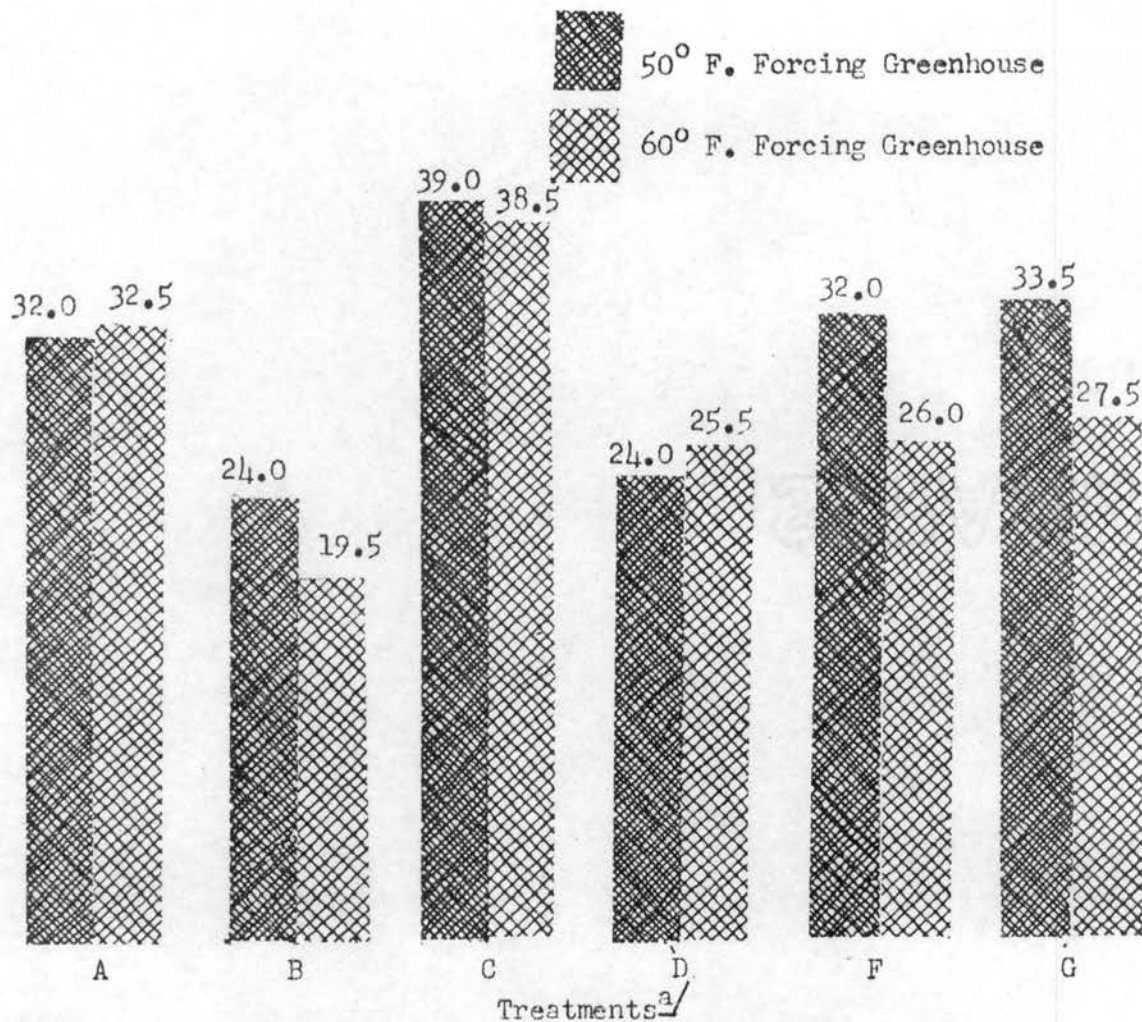


Figure 3. The effects of cooling treatments, and photoperiod treatments in 50° and 60° F. forcing greenhouses at Stillwater, Oklahoma, on the average height of Georgia lilies at maturity<sup>b/</sup>. (16 plants per treatment.)

<sup>a/</sup> Treatments	Cooling Treatment	Forcing Photoperiod
A	Natural Cooling	Normal Day
E	Natural Cooling	Short Day
C	Natural Cooling	Normal Day plus Cyclic Lighting
D	Natural Cooling	Normal Day for Six Weeks Finish in 70° F.
F	Refrigerated Storage at 40° F.	Normal Day
G	Greenhouse Check	Normal Day

<sup>b/</sup>Date that 50 percent of the buds per plant were opened.

There was no appreciable difference in flower diameter between Georgia lily plants forced at 60° F. and at 50° F. as indicated in Table IX (See Appendix).

Table X (See Appendix) shows the flower length of Georgia lilies forced at 50° and 60° F. In general, those plants forced at 60° F. had slightly longer flowers than those forced at 50° F. Short day plants tended to have slightly shorter flowers than plants in other treatments in the 50° and 60° F. greenhouses.

Those plants which were finished in the 70° F. greenhouse had smaller flowers, both diameter and length, than those finished in the 50° or 60° greenhouses. Neither natural cooling nor refrigerated storage had much effect upon flower size.

The relative height and rate of development of Georgia lilies on February 28 is shown in Figure 4. Lilies forced at 60° F., in general, were slightly more mature than those forced at 50° F. The effects of the short day and cyclic lighting photoperiod treatments on plant height were beginning to be evident by this time. As can be seen in Figure 4B, plants which received no cooling treatment (60° F. greenhouse check) were flowering on February 28.

Figure 5 shows the relative height of Georgia lily plants and quality of flowers produced in the 50° and 60° F. greenhouses on April 25 and April 11, respectively. The best quality potted plants at both forcing temperatures were obtained with the natural cooling treatment, followed by the short day photoperiod treatment.

The effects of cooling treatments in 50° and 60° F. forcing greenhouses, on the number of days from start of forcing to bloom of Ace lilies are shown in Table XI (See Appendix). On the average, plants





(A)

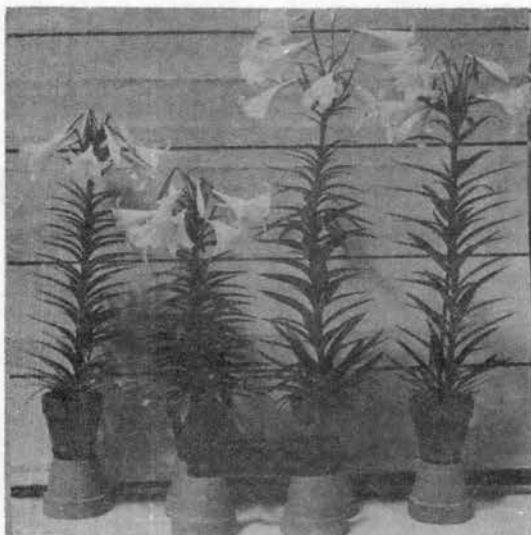


(B)

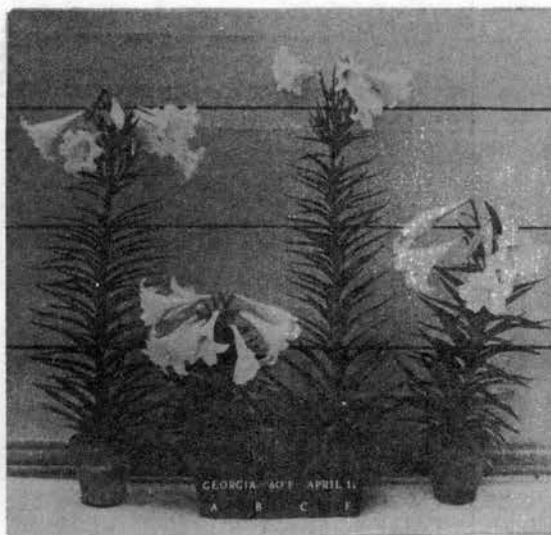
Figure 4. The effects of cooling treatments and photoperiod treatments in (A) 50° and (B) 60° F. forcing greenhouses on February 28 at Stillwater, Oklahoma, on the relative height and rate of development of Georgia lillies.

<u>Treatments</u>	<u>Cooling Treatment</u>	<u>Forcing Photoperiod</u>
A	Natural Cooling	Normal Day
B	Natural Cooling	Short Day
C	Natural Cooling	Normal Day plus Cyclic Lighting
F	Refrigerated Storage at 40° F.	Normal Day
G	Greenhouse Check	Normal Day





(A)



(B)

Figure 5. The effects of cooling treatments and photoperiod treatments in (A) 50° F. forcing greenhouse on April 25 and (B) 60° F. forcing greenhouse on April 11 at Stillwater, Oklahoma, on the relative height on Georgia lilies at maturity. a/

<u>Treatments</u>	<u>Cooling Treatment</u>	<u>Forcing Photoperiod</u>
A	Natural Cooling	Normal Day
B	Natural Cooling	Short Day
C	Natural Cooling	Normal Day plus Cycilic Lighting
F	Refrigerated Storage at 40° F.	Normal Day

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a/ Date that 50 percent of the buds per plant were opened.

forced at 50° F. required approximately three weeks longer to reach maturity than those at 60° F. Plants finished in the 70° F. greenhouse matured one to three weeks earlier than those finished in the 60° and 50° F. greenhouses, respectively.

Table XII (See Appendix) shows the number of days from first visible bud appearance to maturity of Ace lilies. Plants grown at 50° F. required from three to four days longer to mature after the appearance of the first visible bud than those grown at 60° F. Lilies finished in the 70° F. greenhouse reached maturity from four to ten days earlier after the appearance of the first visible bud than those in the 60° and 50° F. greenhouses, respectively.

The effects of natural cooling and refrigerated storage, followed by various photoperiodic conditions in 50° and 60° F. forcing greenhouses, on the average height of Ace lilies are shown in Figure 6 and Table XIII (See Appendix). The shortest finished lilies were obtained in the natural cooling treatment, followed by the short day photoperiod. The natural cooling treatment, followed by the cyclic lighting photoperiod, produced the tallest plants. Except for the cyclic lighting treatment, plants forced at 50° F. were slightly taller than those forced at 60° F.

The average total number of buds per plant of Ace lilies is shown in Table XIV (See Appendix). There was no difference between similar treatments in the 50° and 60° F. forcing greenhouses on the total number of buds per plant. There were slightly fewer buds on plants which were cooled in refrigerated storage than those subjected to natural cooling.

There was little difference in the average number of aborted buds per plant with any of the treatments on Ace lilies as shown in Table XV (See Appendix).

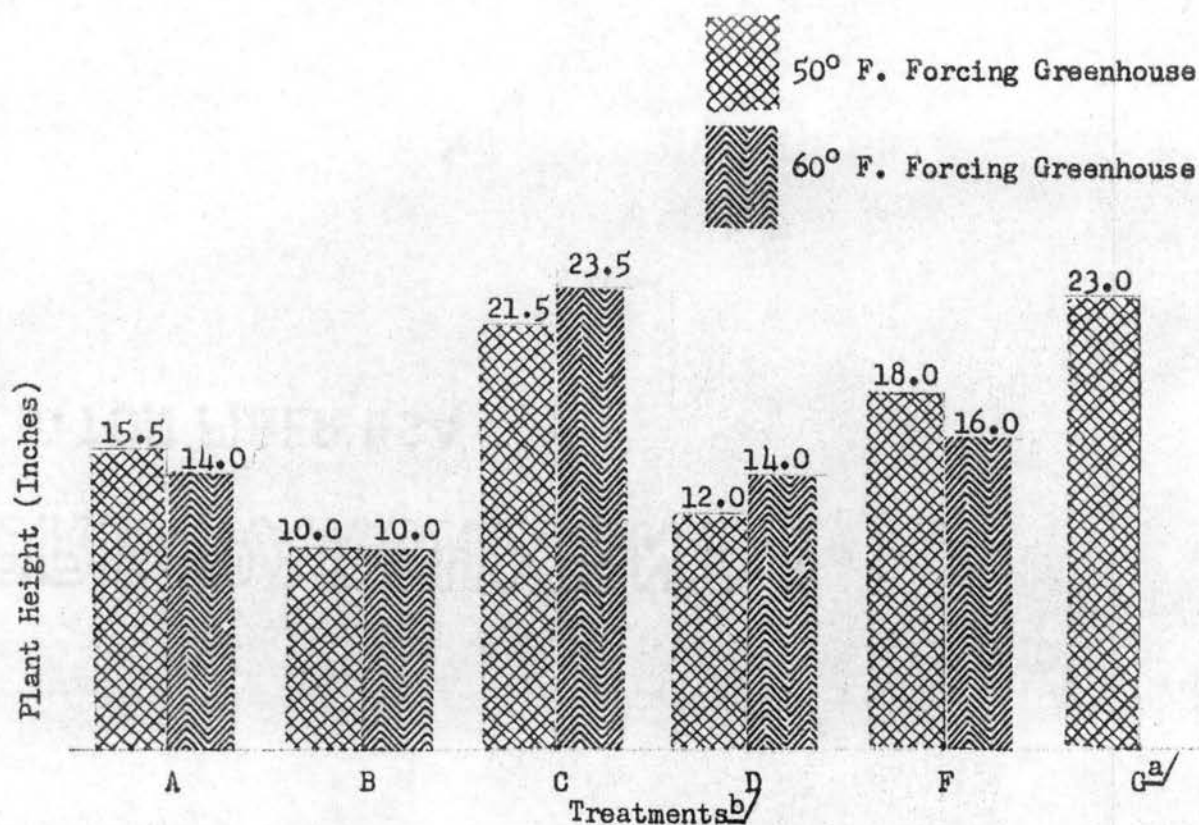


Figure 6. The effects of cooling treatments, and photoperiod treatments in 50° and 60° F. forcing greenhouses at Stillwater, Oklahoma, on the average height of Ace lilies at maturity<sup>c/</sup>. (16 plants per treatment).

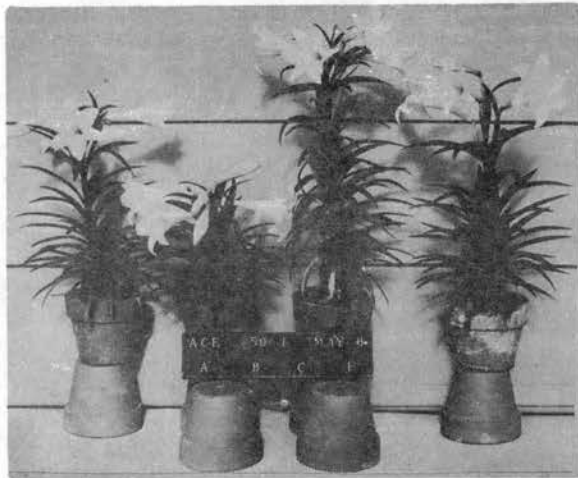
<sup>a/</sup> Those plants in the 60° F. greenhouse were not matured by May 24, 1962.

<sup>b/</sup> Treatments	Cooling Treatment	Forcing Photoperiod
A	Natural Cooling	Normal Day
B	Natural Cooling	Short Day
C	Natural Cooling	Normal Day plus Cyclic Lighting
D	Natural Cooling	Normal Day for Six Weeks Then Finish in 70° F. Greenhouse
F	Refrigerated Storage at 40° F.	Normal Day
G	Greenhouse Check	Normal Day

<sup>c/</sup> Date that 50 percent of the buds per plant were opened.

The diameter and length of flowers of Ace lilies in each of the treatments are shown in Table XVI and XVII (See Appendix), respectively. Plants started at 50° F. and finished at 70° F. were slightly smaller than those finished at 50° F.

Figure 7 shows the relative height of plants and quality of flowers of Ace lilies in the 50° and 60° F. forcing greenhouses on April 19 and May 8, respectively.



(A)



(B)

Figure 7. The effect of cooling treatments and photoperiod treatments in (A) 50° F. forcing greenhouse on May 8 and in (B) 60° F. forcing greenhouse on April 19 at Stillwater, Oklahoma, on the relative height of Ace lilies at maturity. a/

<u>Treatments</u>	<u>Cooling Treatment</u>	<u>Forcing Photoperiod</u>
A	Natural Cooling	Normal Day
B	Natural Cooling	Short Day
C	Natural Cooling	Normal Day plus Cyclic Lighting
F	Refrigerated Storage at 40° F.	Normal Day

a/ Date that 50 percent of the buds per plant were opened.

## CHAPTER V

### DISCUSSION AND CONCLUSION

The production of high quality potted lily plants presents many problems. One of the most important factors is the cooling of the bulbs prior to forcing. Time required for forcing, bud count, and height all are affected by this cooling period.

This study was concerned primarily with the effects of natural cooling and refrigerated storage of potted lilies in the fall, followed by various photoperiods in 50°, 60°, and 70° F. forcing greenhouses, on growth of Georgia and Ace lilies.

There appeared to be no appreciable differences in the time of flowering between those treatments subjected to natural cooling and those cooled in refrigerated storage. It is, therefore, assumed that the natural cooling during the fall of 1961 was sufficient to permit rapid maturity of plants subjected to either 50° or 60° F. forcing temperatures. The results of this study indicate that it may be possible to eliminate the use of refrigeration to cool bulbs where sufficient natural cooling occurs.

Forcing temperatures play an important part in the time required for flowering of lilies. For example, Georgia and Ace lilies forced in the 60° F. greenhouse matured an average of one and three weeks earlier, respectively, than those in the 50° F. greenhouse.

Potted Georgia and Ace lilies which were cooled in refrigerated storage produced fewer buds per plant than those subjected to natural cooling. This reduction in bud count seemed to have been brought about by the long refrigerated storage period at 40° F. The most pronounced reduction was in the Georgia lilies. Naturally cooled plants averaged 11.7 buds per plant while the refrigerated plants averaged 7.2 buds. Only a slight decrease in bud count occurred in the Ace lilies cooled in refrigerated storage. However, the Ace lilies were potted at a later date than the Georgia lilies and were placed in storage immediately after potting before any growth occurred.

There was little difference in the average number of aborted buds per plant between the 50° and 60° F. forcing temperatures. However, when there was a sudden shift of plants to a 70° F. temperature, there tended to be a greater number of aborted buds in the Georgia lilies.

Neither natural cooling nor refrigerated storage had much effect upon flower size. This study indicates that a forcing temperature of 70° F. may reduce flower size in both Georgia and Ace varieties.

One of the most interesting phases of this study was in relation to the effect of photoperiod on plant height. Height was reduced markedly under the short day photoperiod treatment, and was more pronounced with Georgia than with the Ace variety. On the other hand, the cyclic lighting treatment markedly increased the plant height, particularly with the Ace variety. Although cyclic lighting appears to be undesirable with potted plants, due to excessive height, it may be of importance in the production of lilies for cut flowers.

With Georgia lilies natural cooling, followed by a short day photoperiod during forcing appears to be effective in producing a short

plant with a high bud count. Satisfactory plants were produced from 5 to 6 inch circumference bulbs.



## CHAPTER VI

### SUMMARY

The study reported herein was concerned primarily with the effects of natural cooling and refrigerated storage in the fall, followed by various photoperiod treatments in 50°, 60°, and 70° F. forcing greenhouses, on growth of Georgia and Ace lilies. Number of days from start of forcing and from first visible bud appearance to bloom, total number of buds and aborted buds per plant, flower size (diameter and length), and plant height at maturity were recorded during this study.

The principal results are as follows:

1. Both Georgia and Ace lily plants forced at 50° F. required approximately three weeks longer from start of forcing to maturity than plants forced at 60° F.
2. Georgia lilies which received natural cooling in the fall produced a markedly higher bud count than those which were cooled in refrigerated storage at 40° F. for 70 days.
3. There was a slight increase in the average number of aborted buds on Georgia lilies finished at 70° F.
4. Flower size of Georgia lilies was markedly reduced when finished at 70° F. after being forced for six weeks at 50° or 60° F.
5. Plant height in Georgia and Ace lilies, which received natural cooling in the fall, was decreased under a short day photoperiod in both the 50° and 60° F. forcing greenhouses.

6. Plant height in Georgia and Ace lilies, which received natural cooling in the fall, was increased under cyclic lighting in both the 50° and 60° F. forcing greenhouses.
7. The highest quality potted plants were obtained with natural cooling in the fall, followed by a short day photoperiod during forcing. Short compact plants were produced without a reduction in bud count and flower size in both the 50° and 60° F. forcing greenhouses.

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TABLE I

COOLING TREATMENTS, AND PHOTOPERIOD TREATMENTS  
 IN 50° AND 60° F. FORCING GREENHOUSES,  
 FOR EACH VARIETY, GEORGIA AND ACE.  
 (16 PLANTS PER TREATMENT).

TREATMENT	COOLING TREATMENT	FORCING PHOTOPERIOD
A	Natural Cooling	Normal Day <sup>a/</sup>
B	Natural Cooling	Short Day <sup>b/</sup>
C	Natural Cooling	Normal Day plus Cyclic Lighting <sup>c/</sup>
D	Natural Cooling	Normal Day For Six Weeks Then Finish in 70° F. Greenhouse
F	Refrigerated Storage At 40° F.	Normal Day
G	Greenhouse Check	Normal Day

<sup>a/</sup>No supplemental light added.

<sup>b/</sup>Black cloth from 5 p.m. to 8 a.m.

<sup>c/</sup>3 minutes, of 20 f.c., every 30 minutes for four hours from  
10 p.m. to 2 a.m.

TABLE II  
FERTILIZER APPLICATIONS

Date of Application <sup>a/</sup>	Fertilizer Solution	Rate of Application
9/29	20-20-20	1 oz. / 2 gallons water
10/20	20-20-20	1 oz. / 2 gallons water
11/10	33-0-0	1 oz. / 6 gallons water
12/1	20-20-20	1 oz. / 2 gallons water
1/12	20-20-20	1 oz. / 2 gallons water
2/3	33-0-0	1 oz. / 5 gallons water
2/28	20-20-20	1 oz. / 2 gallons water
3/15	33-0-0	1 oz. / 8 gallons water
3/28	20-20-20	1 oz. / 2 gallons water
4/13	20-20-20	1 oz. / 2 gallons water
4/18 <sup>b/</sup>	33-0-0	1 oz. / 5 gallons water

<sup>a/</sup>Plants were watered on each date with the fertilizer solution indicated until pots were saturated. Fertilizer was applied only to those pots in which the plants were at least two inches tall.

<sup>b/</sup>Applied only to Georgia lilies in 50° F. forcing greenhouse.

TABLE III

THE NUMBER OF HOURS OF VARIOUS TEMPERATURES WHICH OCCURRED IN  
THE PLASTIC FRAME HOUSE DURING THE PERIOD OF NATURAL  
COOLING OF GEORGIA AND ACE LILLIES, OCTOBER 1 TO  
JANUARY 9. (TEMPERATURES WERE RECORDED WITH  
A 7-DAY THERMOGRAPH.)

Temperature ° F.	Hours	Temperature ° F.	Hours	Temperature ° F.	Hours
33	12	55	68	77	18
34	2	56	62	78	10
35	14	57	54	79	8
36	28	58	50	80	6
37	32	59	44	81	-
38	44	60	46	82	-
39	50	61	48	83	6
40	70	62	32	84	2
41	80	63	36	85	2
42	104	64	20	86	2
43	170	65	50	87	6
44	66	66	28	88	-
45	76	67	38	89	2
46	104	68	26	90	-
47	110	69	44	91	-
48	122	70	12	92	-
49	130	71	24	93	-
50	80	72	24	94	2
51	96	73	18	95	-
52	84	74	16	96	2
53	70	75	12		
54	46	76	8		

TABLE IV

THE EFFECTS OF COOLING TREATMENTS, AND PHOTOPERIOD TREATMENTS  
IN 50° AND 60° F. FORCING GREENHOUSES, ON THE AVERAGE  
NUMBER OF DAYS FROM START OF FORCING<sup>a/</sup> TO  
MATURITY<sup>b/</sup> OF GEORGIA LILIES.  
(16 PLANTS PER TREATMENT).

Pot No.	Treatments <sup>c/</sup>											
	50° F.						60° F.					
	A	B	C	D	F	G	A	B	C	D	F	G
1	94	94	92	83	109	180	87	88	83	73	91	145
2	96	94	94	84	111	196	87	87	82	76	93	160
3	95	95	96	84	111	189	87	87	82	76	92	135
4	96	97	96	85	116	187	87	90	83	79	91	163
5	98	108	100	84	107	198	86	97	82	73	91	160
6	98	104	101	83	107	199	88	98	83	77	91	161
7	98	111	101	85	106	197	88	100	83	76	90	160
8	97	108	101	84	112	201	88	97	82	73	90	152
9	95	109	101	84	108	207	82	88	82	76	87	167
10	94	109	101	85	108	197	83	87	83	76	87	163
11	97	112	101	85	107	196	83	90	82	77	88	161
12	99	112	102	84	109	187	83	91	83	-	90	156
13	104	106	98	84	104	201	83	88	84	76	84	144
14	105	107	102	85	107	184	84	82	83	77	87	163
15	104	106	99	85	106	202	85	84	83	76	87	169
16	105	106	101	84	107	187	84	87	83	78	88	153
Average	98	105	99	84	108	194	85	90	83	76	89	157

<sup>a/</sup> Forcing date began September 20, 1961 for Treatment G. Forcing date began January 9, 1962 for treatments A, B, C, D, and F.

<sup>b/</sup> Date that 50 percent of the buds per plant were opened.

<sup>c/</sup> Treat- ments	Cooling Treatment	Forcing Photoperiod
A	Natural Cooling	Normal Day
B	Natural Cooling	Short Day
C	Natural Cooling	Normal Day plus Cyclic Lighting
D	Natural Cooling	Normal Day for Six Weeks Then Finish in 70° F. Greenhouse
F	Refrigerated Storage at 40° F.	Normal Day
G	Greenhouse Check	Normal Day



TABLE V

THE EFFECTS OF COOLING TREATMENTS, AND PHOTOPERIOD TREATMENTS  
IN 50° AND 60° F. FORCING GREENHOUSES, ON THE AVERAGE  
NUMBER OF DAYS FROM FIRST VISIBLE BUD TO  
MATURITY<sup>a/</sup> OF GEORGIA LILIES.  
(16 PLANTS PER TREATMENT).

Pot No.	Treatments <sup>b/</sup>											
	50° F.					60° F.						
	A	B	C	D	F	G	A	B	C	D	F	G
1	54	53	50	39	50	56	46	53	46	39	43	44
2	49	50	52	34	49	57	52	52	46	40	44	51
3	53	54	53	37	49	59	49	50	47	36	47	34
4	55	49	51	37	54	58	50	52	47	38	46	53
5	49	51	55	37	49	61	54	49	47	39	46	43
6	48	52	51	39	46	57	47	52	49	40	46	44
7	51	50	48	35	45	60	46	50	49	41	45	47
8	51	53	51	39	47	61	47	47	49	42	45	51
9	49	51	51	34	49	55	48	45	45	39	43	48
10	48	52	53	35	46	55	45	46	49	39	43	46
11	51	50	51	35	45	59	45	49	45	36	40	44
12	51	53	46	37	47	58	45	53	49	-	42	46
13	49	50	50	37	46	59	46	45	46	38	41	47
14	54	49	48	35	49	55	43	48	46	34	45	43
15	54	51	51	35	48	60	41	47	48	38	45	34
16	57	50	51	39	48	58	49	48	49	36	44	43
Average	51	52	51	37	48	58	47	49	47	38	44	45

<sup>a/</sup>Date that 50 percent of the buds per plant were opened.

<sup>b/</sup> Treat- ments	Cooling Treatment	Forcing Photoperiod
A	Natural Cooling	Normal Day
B	Natural Cooling	Short Day
C	Natural Cooling	Normal Day plus Cyclic Lighting
D	Natural Cooling	Normal Day for Six Weeks Then Finish in 70° F. Greenhouse
F	Refrigerated Storage at 40° F.	Normal Day
G	Greenhouse Check	Normal Day

TABLE VI

THE EFFECTS OF COOLING TREATMENTS, AND PHOTOPERIOD TREATMENTS  
IN 50° AND 60° F. FORCING GREENHOUSES, ON THE AVERAGE  
PLANT HEIGHT OF GEORGIA LILIES AT MATURITY<sup>a/</sup>  
(16 PLANTS PER TREATMENT).

Pot No.	Treatments <sup>b/</sup>											
	50° F.						60° F.					
	A	B	C	D	F	G	A	B	C	D	F	G
1	31.5	25.0	38.5	24.5	32.5	33.5	32.0	20.0	36.0	30.0	23.0	21.5
2	31.0	23.0	36.0	26.0	34.0	35.0	31.5	20.0	39.0	29.0	23.5	27.5
3	36.0	27.0	35.5	24.0	35.0	33.5	34.0	19.0	38.0	26.5	27.5	21.0
4	28.5	23.0	39.0	24.5	25.5	33.0	36.0	20.0	43.0	24.0	22.0	30.0
5	29.0	22.0	36.0	23.0	31.0	35.0	32.0	17.0	39.0	25.0	25.0	30.0
6	31.0	26.0	41.0	27.0	32.5	33.5	36.0	19.0	38.5	26.5	30.0	32.0
7	33.0	29.5	36.5	25.0	32.0	32.0	29.5	16.0	35.5	28.5	30.0	29.0
8	33.0	25.0	39.0	33.0	25.0	31.0	34.0	20.5	39.0	24.5	28.0	28.0
9	34.0	24.0	40.5	22.0	31.0	32.5	31.0	19.0	37.0	20.5	22.0	29.0
10	35.0	26.5	42.0	23.0	35.0	32.0	30.0	27.0	39.0	27.5	26.5	30.0
11	28.5	22.5	38.0	24.0	37.5	35.0	31.0	22.0	39.0	18.5	23.0	29.0
12	33.0	23.0	40.0	23.0	30.0	36.0	30.5	18.0	35.0	-	20.5	26.0
13	36.0	25.5	41.0	21.0	35.0	33.0	35.0	20.0	36.0	25.5	28.0	27.0
14	31.5	25.0	37.0	18.0	33.5	31.5	34.0	18.0	38.0	25.0	31.0	29.5
15	31.5	22.0	41.0	21.0	34.0	35.5	30.0	19.0	40.0	26.0	29.5	27.5
16	29.5	18.5	42.5	24.0	30.0	33.5	32.0	17.0	41.5	23.5	23.5	26.0
Average	32.0	24.0	39.0	24.0	32.0	33.5	32.5	19.5	38.5	25.5	26.0	27.5

<sup>a/</sup>Date that 50 percent of the buds per plant were opened.

<sup>b/</sup> Treat- ments	Cooling Treatment	Forcing Photoperiod
A	Natural Cooling	Normal Day
B	Natural Cooling	Short Day
C	Natural Cooling	Normal Day plus Cyclic Lighting
D	Natural Cooling	Normal Day for Six Weeks Then Finish in 70° F. Greenhouse
F	Refrigerated Storage at 40° F.	Normal Day
G	Greenhouse Check	Normal Day

TABLE VII

THE EFFECTS OF COOLING TREATMENTS, AND PHOTOPERIOD TREATMENTS  
IN 50° AND 60° F. FORCING GREENHOUSES, ON THE AVERAGE  
TOTAL NUMBER OF BUDS PER PLANT OF  
GEORGIA LILIES AT MATURITY<sup>a/</sup>  
(16 PLANTS PER TREATMENT).

Pot No.	Treatments <sup>b/</sup>											
	50° F.						60° F.					
	A	B	C	D	F	G	A	B	C	D	F	G
1	16	13	12	13	6	9	12	14	11	14	7	8
2	14	13	12	13	11	15	15	14	10	13	6	10
3	13	16	15	14	8	18	12	11	10	14	9	8
4	13	12	11	13	10	12	14	13	11	11	7	13
5	13	15	14	12	7	16	15	11	8	11	8	9
6	9	12	13	16	6	12	11	13	10	11	7	8
7	15	14	10	13	6	11	10	10	16	13	7	7
8	13	13	11	14	5	17	12	12	11	11	7	12
9	13	10	10	10	7	12	10	10	7	10	7	9
10	11	15	12	10	6	11	9	9	11	13	6	9
11	13	10	12	11	7	13	11	11	7	5	6	6
12	10	10	12	14	8	14	10	13	11	-	5	6
13	9	12	12	11	6	15	11	9	12	11	6	7
14	11	11	10	10	9	7	12	12	9	10	8	6
15	12	10	11	8	8	14	10	13	13	11	6	7
16	14	12	13	12	8	11	15	14	11	11	8	5
Average	12.4	12.4	11.9	12.1	7.4	12.9	11.8	11.8	10.5	11.3	6.9	8.1

<sup>a/</sup>Date that 50 percent of the buds per plant were opened.

<sup>b/</sup> Treat- ments	Cooling Treatment	Forcing Photoperiod
A	Natural Cooling	Normal Day
B	Natural Cooling	Short Day
C	Natural Cooling	Normal Day plus Cyclic Lighting
D	Natural Cooling	Normal Day for Six Weeks Then Finish in 70° F. Greenhouse
F	Refrigerated Storage at 40° F.	Normal Day
G	Greenhouse Check	Normal Day

TABLE VIII

THE EFFECTS OF COOLING TREATMENTS, AND PHOTOPERIOD TREATMENTS  
IN 50° AND 60° F. FORCING GREENHOUSES, ON THE AVERAGE  
TOTAL NUMBER OF ABORTED BUDS PER PLANT OF  
GEORGIA LILIES AT MATURITY<sup>a/</sup>  
(16 PLANTS PER TREATMENT).

Pot No.	Treatments <sup>b/</sup>											
	50° F.						60° F.					
	A	B	C	D	F	G	A	B	C	D	F	G
1	3	0	1	3	0	0	0	1	1	1	0	0
2	3	1	1	4	1	0	1	1	0	2	0	0
3	0	1	3	3	0	1	0	0	0	4	0	0
4	0	3	0	4	0	0	2	1	0	0	0	1
5	2	0	3	4	0	0	1	2	0	0	1	0
6	0	1	1	3	0	0	0	2	0	0	0	0
7	0	2	0	4	0	0	0	1	0	0	0	0
8	0	0	0	2	0	0	0	2	0	1	0	0
9	2	0	0	2	0	0	0	0	0	1	0	0
10	1	0	0	1	0	0	0	0	0	4	0	0
11	1	1	0	2	0	0	0	1	0	0	0	0
12	0	0	0	4	0	0	0	0	0	0	0	0
13	0	1	0	5	0	0	0	0	0	1	0	0
14	0	0	0	1	0	0	0	0	0	1	0	0
15	1	0	0	0	0	0	0	0	1	2	0	0
16	0	1	1	1	0	0	2	0	0	1	0	0
Average	.8	.7	.6	2.7	.1	.1	.4	.7	.1	1.2	.1	.1

<sup>a/</sup>Date that 50 percent of the buds per plant were opened.

<sup>b/</sup> Treat- ments	Cooling Treatment	Forcing Photoperiod
A	Natural Cooling	Normal Day
B	Natural Cooling	Short Day
C	Natural Cooling	Normal Day plus Cyclic Lighting
D	Natural Cooling	Normal Day for Six Weeks Then Finish in 70° F. Greenhouse
F	Refrigerated Storage at 40° F.	Normal Day
G	Greenhouse Check	Normal Day

TABLE IX

THE EFFECTS OF COOLING TREATMENTS, AND PHOTOPERIOD TREATMENTS  
IN 50° AND 60° F. FORCING GREENHOUSES, ON THE AVERAGE  
FLOWER SIZE (DIAMETER) IN INCHES OF GEORGIA LILIES  
AT MATURITY<sup>a/</sup>. THREE MATURE FLOWERS  
PER PLANT WERE MEASURED.  
(16 PLANTS PER TREATMENT)

Pot No.	Treatments <sup>b/</sup>											
	50° F.						60° F.					
	A	B	C	D	F	G	A	B	C	D	F	G
1	5.75	5.75	5.50	4.75	5.50	6.25	5.75	5.50	5.00	4.25	5.75	5.50
	5.75	5.75	5.25	4.75	5.50	6.25	6.00	5.75	5.50	4.25	5.75	5.00
2	5.50	5.75	5.25	4.50	5.50	6.25	5.75	5.75	5.50	4.25	5.75	5.00
	5.75	5.75	5.00	4.50	5.00	6.25	5.50	5.50	5.25	4.75	5.50	6.00
3	5.50	5.50	5.00	4.25	5.00	6.25	5.50	5.50	5.50	4.75	5.75	6.00
	5.50	5.50	4.75	4.50	5.00	6.25	5.50	5.50	5.25	4.75	5.50	6.00
4	5.75	5.75	5.25	4.50	5.75	6.25	5.75	5.25	5.50	5.00	5.75	5.00
	5.75	5.75	5.25	4.50	5.75	6.25	5.50	5.50	5.75	5.00	5.50	4.75
5	5.75	5.75	5.25	4.50	5.75	6.25	5.75	5.50	5.75	4.75	5.50	5.00
	5.75	5.50	5.75	4.50	5.75	5.75	5.50	5.50	5.75	4.75	5.75	5.75
6	5.50	5.50	5.50	4.50	5.75	5.75	5.50	5.75	5.50	4.50	6.00	5.75
	5.50	5.50	5.50	4.50	5.75	5.75	5.50	5.75	5.75	4.75	5.75	5.75
7	5.25	5.00	5.00	4.50	5.75	5.50	5.50	6.00	5.50	4.50	5.50	7.00
	5.25	5.00	5.00	4.50	5.75	5.75	5.75	6.00	5.75	4.50	5.50	6.25
8	5.25	4.75	5.00	4.25	5.75	5.50	5.75	5.75	5.50	4.75	5.50	6.75
	5.50	5.50	5.25	4.75	5.75	5.75	6.00	5.50	5.75	4.50	5.75	6.25
9	5.50	5.50	5.25	4.75	5.75	5.75	6.00	5.25	5.50	4.75	6.00	6.25
	5.50	5.50	5.25	4.50	5.75	5.75	6.00	5.25	5.50	4.50	6.00	6.25
10	6.00	5.75	5.25	4.75	5.50	5.75	5.50	5.50	5.25	4.75	6.00	6.00
	6.00	5.75	5.25	4.50	5.50	5.75	5.75	5.50	5.50	5.00	6.00	5.75
11	6.00	5.75	5.25	4.50	5.50	5.75	5.75	5.50	5.50	5.00	6.00	6.00
	6.00	5.75	5.25	4.50	5.50	5.75	5.75	5.50	5.50	5.00	6.00	6.00

<sup>a/</sup>Date that 50 percent of the buds per plant were opened.

<sup>b/</sup> Treat- ments	Cooling Treatment	Forcing Photoperiod
A	Natural Cooling	Normal Day
B	Natural Cooling	Short Day
C	Natural Cooling	Normal Day plus Cyclic Lighting
D	Natural Cooling	Normal Day for Six Weeks Then Finish in 70° F. Greenhouse
F	Refrigerated Storage at 40° F.	Normal Day
G	Greenhouse Check	Normal Day



TABLE IX (Continued)

Pot No.	Treatments											
	50° F.						60° F.					
	A	B	C	D	F	G	A	B	C	D	F	G
8	5.50	5.25	5.50	5.00	5.75	5.75	5.75	5.50	5.50	4.25	6.25	6.00
	5.50	5.00	5.50	4.50	5.75	5.75	6.00	5.75	5.50	4.50	6.25	6.00
9	5.50	5.00	5.50	5.00	5.50	5.50	5.75	5.50	5.25	4.00	6.00	5.50
	5.50	5.50	5.25	4.75	5.25	5.25	5.50	5.75	5.75	4.50	6.00	6.00
	5.50	5.75	5.25	4.50	5.25	5.25	5.75	5.50	5.50	3.75	6.00	5.50
10	5.50	5.50	5.25	4.75	5.25	5.25	5.50	5.75	5.50	4.25	5.75	6.25
	5.75	5.50	5.75	4.75	6.00	5.00	5.50	5.50	5.50	4.50	6.00	5.75
	5.75	5.50	5.50	4.75	6.00	5.00	5.50	5.25	5.50	4.75	6.00	5.75
11	5.75	5.25	5.50	4.75	6.00	5.00	5.75	5.25	5.50	4.50	6.00	5.75
	5.25	4.75	5.00	4.50	5.75	5.75	5.75	5.50	5.50	4.75	5.75	6.00
	5.25	4.75	5.00	4.50	5.75	5.75	5.50	5.50	5.50	5.00	5.75	6.00
12	5.25	4.75	5.25	4.75	6.00	5.50	5.75	5.50	5.50	4.75	5.50	5.75
	5.50	5.00	5.50	4.75	5.25	5.50	5.50	5.50	5.75	-	5.75	6.00
	5.50	5.00	5.50	4.50	5.25	5.25	5.75	5.50	5.50	-	5.75	6.00
13	5.50	5.25	5.50	4.75	5.50	5.50	5.75	5.25	5.50	-	6.00	6.25
	6.00	4.75	5.25	4.50	5.50	5.50	5.50	5.75	5.50	5.00	5.50	5.75
	6.00	4.75	5.25	4.50	5.50	5.75	5.75	6.00	5.25	5.00	5.25	6.25
14	5.75	4.75	5.25	4.50	5.50	5.75	5.75	5.75	5.25	5.25	5.25	6.25
	5.50	4.75	5.25	4.50	5.25	5.50	5.50	5.00	5.50	4.00	6.00	5.75
	5.50	4.75	5.25	4.50	5.25	5.50	5.75	5.25	5.25	4.00	6.00	6.25
15	5.50	4.75	5.00	4.50	5.25	5.25	5.50	5.25	5.25	4.25	6.00	6.00
	6.00	5.25	5.50	4.75	6.00	5.50	5.50	5.50	5.00	5.25	5.75	6.00
	5.75	5.00	5.25	4.50	6.00	5.75	5.75	5.00	5.00	5.00	5.75	5.75
16	5.75	5.00	5.50	4.50	6.25	5.75	5.75	5.00	5.75	5.00	5.75	6.25
	5.50	5.75	5.00	4.50	5.75	6.25	5.50	5.00	5.00	4.75	6.00	6.25
	5.25	5.50	5.25	4.50	5.75	6.25	5.50	5.25	5.00	4.50	6.00	6.50
	5.25	5.50	5.00	4.75	5.75	6.25	5.25	5.50	5.25	4.75	5.75	6.00
Average	5.59	5.30	5.28	4.59	5.60	5.72	5.65	5.49	5.45	4.63	5.80	5.91

TABLE X

THE EFFECTS OF COOLING TREATMENTS, AND PHOTOPERIOD TREATMENTS  
 IN 50° AND 60° F. FORCING GREENHOUSES, ON THE AVERAGE  
 FLOWER SIZE (LENGTH) IN INCHES OF GEORGIA LILIES  
 AT MATURITY<sup>a/</sup>. THREE MATURE FLOWERS  
 PER PLANT WERE MEASURED.  
 (16 PLANTS PER TREATMENT)

Pot No.	Treatments <sup>b/</sup>											
	50° F.						60° F.					
	A	B	C	D	F	G	A	B	C	D	F	G
1	6.00	6.00	6.00	5.25	6.00	6.25	6.00	5.50	6.00	5.00	6.50	5.75
	6.00	6.00	6.00	5.25	6.50	6.25	6.00	6.00	6.00	5.00	6.50	6.00
	6.00	6.00	6.00	5.00	6.00	6.25	6.00	6.00	6.00	5.00	6.50	5.75
2	6.25	6.00	6.00	5.25	5.75	6.25	5.75	5.75	6.00	5.00	6.50	6.50
	6.25	6.00	6.00	5.25	5.75	6.25	6.00	5.75	6.00	5.25	6.50	6.50
	6.25	6.00	6.00	5.25	5.75	6.25	6.00	6.00	6.00	5.00	6.25	6.25
3	6.25	6.25	6.00	5.50	6.00	6.25	6.25	6.00	6.50	5.25	6.25	6.00
	6.25	6.00	6.00	5.50	6.00	6.00	6.00	6.00	6.50	5.25	6.25	6.00
	6.25	6.00	6.00	5.50	6.00	6.25	6.25	6.00	6.50	5.00	6.25	5.75
4	6.25	6.00	6.50	5.25	6.00	6.00	6.25	5.50	6.50	5.25	6.50	6.50
	6.00	6.00	6.50	5.25	6.00	5.75	6.00	5.50	6.50	5.50	6.50	6.00
	6.00	6.00	6.00	5.50	6.00	6.00	6.25	5.75	6.50	5.50	6.50	6.00
5	5.75	5.00	5.50	4.75	6.00	5.50	6.25	6.00	6.50	5.25	6.75	6.50
	5.75	5.00	5.50	4.75	6.00	5.50	6.00	6.00	6.50	5.50	6.50	6.75
	5.75	5.00	5.50	4.50	6.00	5.50	6.00	6.00	6.50	5.25	6.50	6.50
6	5.75	6.00	6.50	5.25	6.25	5.75	6.50	5.75	6.25	5.00	6.50	6.50
	5.75	5.75	6.50	5.50	6.25	6.00	6.50	5.50	6.00	5.00	6.50	6.25
	5.75	5.75	6.50	5.25	6.25	6.00	6.50	5.50	6.25	5.25	6.50	6.50
7	6.25	6.00	6.00	5.25	6.00	6.00	6.50	5.75	5.25	5.25	6.75	6.25
	6.25	5.75	6.00	5.25	6.00	6.25	6.50	5.50	5.50	5.25	6.50	6.25
	6.25	5.75	6.00	5.25	6.00	6.00	6.50	5.50	5.50	5.00	6.50	6.50

<sup>a/</sup>Date that 50 percent of the buds per plant were opened.

<sup>b/</sup> Treatments	Cooling Treatment	Forcing Photoperiod
A	Natural Cooling	Normal Day
B	Natural Cooling	Short Day
C	Natural Cooling	Normal Day plus Cyclic Lighting
D	Natural Cooling	Normal Day for Six Weeks Then Finish in 70° F. Greenhouse
F	Refrigerated Storage at 40° F.	Normal Day
G	Greenhouse Check	Normal Day

TABLE X (Continued)

Pot No.	Treatments											
	50° F.						60° F.					
	A	B	C	D	F	G	A	B	C	D	F	G
8	5.75	5.25	6.00	5.75	6.00	6.25	6.50	6.00	6.25	5.00	6.50	6.00
	5.75	5.25	6.00	5.50	6.00	6.25	6.50	6.00	6.50	5.25	6.50	6.00
9	5.75	5.25	6.00	5.50	6.00	6.00	6.25	6.00	6.25	4.75	6.50	5.75
	5.75	5.75	6.00	5.25	5.75	5.75	6.25	5.50	6.50	4.50	6.50	6.25
	5.75	6.00	6.25	5.25	5.75	6.00	6.25	5.50	6.50	4.00	6.50	6.25
10	5.75	6.00	6.00	5.25	5.75	6.00	6.00	5.50	6.50	4.25	6.50	6.25
	6.00	6.00	6.25	5.25	6.25	5.75	6.00	5.50	6.50	4.75	6.50	6.25
11	6.00	6.00	6.25	5.50	6.25	5.75	6.25	5.25	6.00	5.00	6.50	6.25
	6.00	5.75	6.00	5.25	6.25	5.75	6.25	5.25	6.50	4.50	6.50	6.25
	5.75	5.00	6.00	5.25	6.25	6.00	6.25	6.00	6.50	5.00	6.50	6.50
12	5.75	5.00	6.00	5.25	6.25	6.00	6.00	6.00	6.50	5.00	6.50	6.50
	5.75	4.75	6.00	5.50	6.25	6.00	6.25	5.75	6.25	4.75	6.25	6.50
	6.00	5.25	6.00	5.25	5.75	6.25	6.25	5.75	6.25	-	6.50	6.50
13	6.00	5.25	6.00	5.00	5.75	6.25	6.50	5.75	6.25	-	6.50	6.50
	5.75	5.25	6.00	5.25	5.75	6.00	6.25	5.50	6.00	-	6.50	6.50
	6.00	5.50	6.00	5.25	6.00	6.00	6.25	6.00	6.50	5.50	6.50	6.25
14	6.00	5.50	6.00	5.25	6.00	6.00	6.50	6.00	6.25	5.50	6.50	6.25
	6.00	5.50	6.00	5.25	6.00	6.25	6.25	6.00	6.25	5.25	6.50	6.25
	6.00	5.50	6.00	5.75	5.25	6.00	6.25	6.00	6.50	5.00	6.50	6.50
15	6.00	5.50	6.00	5.00	6.00	6.00	6.25	6.00	6.00	5.00	6.25	6.50
	6.00	5.75	6.00	5.25	6.25	6.00	6.00	6.00	6.25	5.25	6.25	6.25
	6.00	5.75	6.00	5.00	6.25	6.25	6.25	6.00	6.00	5.00	6.50	6.25
16	6.00	5.75	6.00	5.25	6.25	6.25	6.25	6.00	6.25	5.00	6.25	6.25
	5.75	6.00	5.50	5.00	6.25	6.25	6.00	6.00	6.25	5.00	6.50	6.25
	5.50	5.75	5.50	5.00	6.25	6.25	6.00	6.00	6.00	5.00	6.50	6.50
	5.50	5.75	5.50	5.25	6.25	6.25	6.00	6.00	6.25	5.25	6.25	6.25
Average	5.94	5.66	6.00	5.23	6.04	6.04	6.20	5.80	6.23	5.05	6.46	6.28



TABLE XI

THE EFFECTS OF COOLING TREATMENTS, AND PHOTOPERIOD TREATMENTS  
IN 50° AND 60° F. FORCING GREENHOUSES, ON THE AVERAGE  
NUMBER OF DAYS FROM START OF FORCING<sup>a/</sup>  
TO MATURITY<sup>b/</sup> OF ACE LILIES.  
(16 PLANTS PER TREATMENT).

Pot No.	Treatments <sup>c/</sup>											
	50° F.						60° F.					
	A	B	C	D	F	G	A	B	C	D	F	Gd/
1	122	121	116	97	123	238	100	108	97	94	97	
2	123	121	116	99	121	244	101	101	97	95	98	
3	123	121	116	97	121	244	100	102	97	90	100	
4	118	122	117	100	119	241	101	108	97	90	100	
5	122	121	116	97	118	243	99	101	99	90	98	
6	122	121	118	97	116	229	99	102	96	90	98	
7	121	121	121	96	116	241	100	102	101	89	98	
8	121	121	121	101	118	244	106	114	99	89	98	
9	118	125	121	96	119	237	99	99	102	91	91	
10	117	122	121	95	119	244	99	102	102	90	92	
11	121	125	121	96	121	238	106	100	97	89	94	
12	121	122	121	99	121	241	100	105	99	98	92	
13	121	118	121	96	121	238	99	98	102	88	97	
14	121	121	121	96	116	240	99	109	98	91	96	
15	121	120	118	96	116	233	101	99	101	90	98	
16	121	118	119	97	116	240	99	101	102	90	97	
Average	121	121	119	97	119	240	101	103	99	91	97	

<sup>a/</sup>Forcing date began October 31, 1961, for treatment G. Forcing date began January 9, 1962 for treatments A, B, C, D, and F.

<sup>b/</sup>Date that 50 percent of the buds per plant were opened.

<sup>c/</sup> Treatments	Cooling Treatment	Forcing Photoperiod
A	Natural Cooling	Normal Day
B	Natural Cooling	Short Day
C	Natural Cooling	Normal Day plus Cyclic Lighting
D	Natural Cooling	Normal Day for Six Weeks Then Finish in 70° F. Greenhouse
F	Refrigerated Storage at 40° F.	Normal Day
G	Greenhouse Check	Normal Day

<sup>d/</sup>Not matured by May 24, 1962.

TABLE XII

THE EFFECTS OF COOLING TREATMENTS, AND PHOTOPERIOD TREATMENTS IN 50° AND 60° F. FORCING GREENHOUSES, ON THE AVERAGE NUMBER OF DAYS FROM FIRST VISIBLE BUD TO MATURITY<sup>a/</sup> OF ACE LILIES. (16 PLANTS PER TREATMENT).

Pot No.	Treatments <sup>b/</sup>											
	50° F.						60° F.					
	A	B	C	D	F	G	A	B	C	D	F	G <sup>c/</sup>
1	37	38	43	33	44	37	36	36	38	30	39	
2	36	42	45	30	45	33	38	41	39	33	40	
3	32	42	43	32	42	34	34	33	40	32	38	
4	41	43	45	31	43	36	32	39	39	32	42	
5	39	41	38	28	40	33	41	33	39	32	36	
6	33	38	40	33	38	29	39	34	40	32	40	
7	45	41	38	27	40	31	38	34	38	31	36	
8	43	38	42	32	42	34	34	41	38	31	34	
9	42	34	41	27	43	36	33	37	39	33	35	
10	39	39	43	31	43	33	34	34	33	32	35	
11	40	42	43	33	43	37	38	38	39	31	35	
12	39	40	40	27	41	37	36	36	37	33	34	
13	40	36	38	34	38	32	37	36	37	31	32	
14	38	39	31	33	37	29	37	32	36	33	38	
15	33	37	40	33	37	39	35	33	32	32	36	
16	41	39	41	29	37	29	37	32	33	32	39	
Average	39	39	41	31	41	34	36	36	37	32	37	

<sup>a/</sup> Date that 50 percent of the buds per plant were opened.

<sup>b/</sup> Treatments	Cooling Treatment	Forcing Photoperiod
A	Natural Cooling	Normal Day
B	Natural Cooling	Short Day
C	Natural Cooling	Normal Day plus Cyclic Lighting
D	Natural Cooling	Normal Day for Six Weeks Then Finish in 70° F. Greenhouse
F	Refrigerated Storage at 40° F.	Normal Day
G	Greenhouse Check	Normal Day

<sup>c/</sup> Not matured by May 24, 1962.

TABLE XIII

THE EFFECTS OF COOLING TREATMENTS, AND PHOTOPERIOD TREATMENTS  
IN 50° AND 60° F. FORCING GREENHOUSES, ON THE AVERAGE  
PLANT HEIGHT OF ACE LILIES AT MATURITY<sup>a/</sup>  
(16 PLANTS PER TREATMENT).

Pot No.	Treatments <sup>b/</sup>											G <sup>c/</sup>
	50° F.						60° F.					
	A	B	C	D	F	G	A	B	C	D	F	
1	15.0	12.0	21.0	10.0	12.5	22.0	11.0	8.5	24.5	13.5	13.0	
2	15.5	10.0	29.0	11.0	14.0	26.0	11.0	10.0	23.5	13.5	14.0	
3	17.0	8.0	24.0	14.5	11.0	20.0	16.0	8.0	24.5	19.5	11.5	
4	11.5	9.0	24.5	11.5	17.0	19.0	14.5	8.0	16.5	13.0	13.0	
5	13.0	10.5	25.5	9.0	16.5	25.0	15.0	9.0	22.0	12.0	17.0	
6	21.0	12.0	22.5	13.0	19.0	26.5	15.0	11.5	28.0	12.0	13.0	
7	13.5	10.5	20.0	15.0	18.0	26.5	14.0	10.0	26.0	15.5	13.5	
8	15.0	10.0	17.0	9.0	26.5	21.0	11.5	10.5	21.0	17.0	14.0	
9	20.0	7.0	21.5	11.5	25.0	25.5	15.5	9.0	13.0	11.0	18.5	
10	15.5	9.5	18.5	14.0	22.0	24.5	15.5	10.5	20.0	14.0	22.0	
11	15.0	8.5	19.0	16.5	26.0	24.5	15.0	12.0	27.0	16.5	23.5	
12	14.5	9.0	13.0	13.5	18.5	19.5	12.0	11.0	23.5	13.5	21.0	
13	15.5	10.5	23.5	10.0	17.0	23.5	12.0	12.5	27.0	12.0	11.5	
14	15.0	11.0	20.0	11.0	15.0	24.0	13.5	13.0	30.0	12.0	19.0	
15	16.5	11.0	22.0	12.5	16.0	20.0	13.0	9.0	21.0	13.0	18.0	
16	13.0	8.0	23.0	13.0	15.0	24.0	15.0	9.0	26.0	13.0	11.5	
Average	15.5	10.0	21.5	12.0	18.0	23.0	14.0	10.0	23.5	14.0	16.0	

<sup>a/</sup>Date that 50 percent of the buds per plant were opened.

<sup>b/</sup> Treat- ments	Cooling Treatment	Forcing Photoperiod
A	Natural Cooling	Normal Day
B	Natural Cooling	Short Day
C	Natural Cooling	Normal Day plus Cyclic Lighting
D	Natural Cooling	Normal Day for Six Weeks Then Finish in 70° F. Greenhouse
F	Refrigerated Storage at 40° F.	Normal Day
G	Greenhouse Check	Normal Day

<sup>c/</sup>Not matured by May 24, 1962.

TABLE XIV

THE EFFECTS OF COOLING TREATMENTS, AND PHOTOPERIOD TREATMENTS  
IN 50° AND 60° F. FORCING GREENHOUSES, ON THE AVERAGE  
TOTAL NUMBER OF BUDS PER PLANT  
OF ACE LILIES AT MATURITY<sup>a/</sup>  
(16 PLANTS PER TREATMENT).

Pot No.	Treatments <sup>b/</sup>											
	50° F.						60° F.					
	A	B	C	D	F	G	A	B	C	D	F	G <sup>c/</sup>
1	4	7	5	5	5	9	5	6	6	4	4	
2	6	6	9	6	4	8	6	6	5	5	5	
3	3	5	8	5	3	8	6	6	9	5	5	
4	6	5	5	5	4	10	6	5	5	6	5	
5	6	5	6	4	3	8	6	7	5	5	3	
6	6	6	5	7	5	10	5	5	8	7	4	
7	7	6	4	6	3	7	6	5	5	5	4	
8	6	5	6	6	6	8	4	3	6	7	4	
9	7	3	6	6	3	8	6	6	5	6	5	
10	5	6	6	7	4	9	5	7	7	6	5	
11	5	6	6	6	4	8	6	5	5	5	6	
12	6	6	6	5	4	10	5	5	6	5	3	
13	5	5	5	6	3	10	5	6	5	5	2	
14	5	5	4	6	6	7	6	4	6	7	5	
15	5	5	5	6	5	10	5	5	6	5	3	
16	6	5	6	4	5	8	6	5	6	5	5	
Average	5.5	5.4	5.8	5.6	4.2	8.6	5.5	5.4	5.9	5.5	4.3	

<sup>a/</sup>Date that 50 percent of the buds per plant were opened.

<sup>b/</sup> Treatments	Cooling Treatment	Forcing Photoperiod
A	Natural Cooling	Normal Day
B	Natural Cooling	Short Day
C	Natural Cooling	Normal Day plus Cyclic Lighting
D	Natural Cooling	Normal Day for Six Weeks Then Finish in 70° F. Greenhouse
F	Refrigerated Storage at 40° F.	Normal Day
G	Greenhouse Check	Normal Day

<sup>c/</sup>Not matured by May 24, 1962.

TABLE XV

THE EFFECTS OF COOLING TREATMENTS, AND PHOTOPERIOD TREATMENTS  
IN 50° AND 60° F. FORCING GREENHOUSES, ON THE AVERAGE  
TOTAL NUMBER OF ABORTED BUDS PER PLANT  
OF ACE LILIES AT MATURITY<sup>a/</sup>  
(16 PLANTS PER TREATMENT).

Pot No.	Treatments <sup>b/</sup>											
	50° F.						60° F.					
	A	B	C	D	F	G	A	B	C	D	F	G <sup>c/</sup>
1	0	0	0	0	0	0	0	0	0	1	0	
2	0	0	0	0	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	0	0	0	0	
5	0	0	0	0	0	0	0	0	0	0	0	
6	0	0	0	1	0	0	0	0	0	1	0	
7	1	0	0	0	0	0	0	0	0	0	0	
8	0	0	0	0	0	0	0	0	0	1	0	
9	0	0	0	0	0	1	0	0	0	0	0	
10	0	0	0	0	0	0	0	0	0	0	0	
11	0	1	0	0	0	0	0	0	0	0	0	
12	0	0	1	0	0	1	0	0	0	0	0	
13	0	0	0	0	0	0	0	0	0	0	0	
14	0	0	0	1	0	0	0	0	0	1	0	
15	0	0	0	0	0	1	0	0	0	0	0	
16	0	0	0	0	0	0	0	0	0	0	0	
Average	.06	.06	.06	.13	0	.19	0	0	0	.25	0	

<sup>a/</sup>Date that 50 percent of the buds per plant were opened.

<sup>b/</sup> Treat- ments	Cooling Treatment	Forcing Photoperiod
A	Natural Cooling	Normal Day
B	Natural Cooling	Short Day
C	Natural Cooling	Normal Day plus Cyclic Lighting
D	Natural Cooling	Normal Day for Six Weeks Then Finish in 70° F. Greenhouse
F	Refrigerated Storage at 40° F.	Normal Day
G	Greenhouse Check	Normal Day

<sup>c/</sup>Not matured by May 24, 1962.



TABLE XVI

THE EFFECTS OF COOLING TREATMENTS, AND PHOTOPERIOD TREATMENTS  
IN 50° AND 60° F. FORCING GREENHOUSES, ON THE AVERAGE  
FLOWER SIZE (DIAMETER) IN INCHES OF ACE LILIES  
AT MATURITY<sup>a/</sup>. THREE MATURE FLOWERS  
PER PLANT WERE MEASURED.  
(16 PLANTS PER TREATMENT)

Pot No.	Treatments <sup>b/</sup>											
	50° F.						60° F.					GC <sup>c/</sup>
	A	B	C	D	F	G	A	B	C	D	F	
1	5.25	5.00	5.00	4.25	5.25	4.00	4.25	4.75	5.00	4.50	4.25	
	5.25	5.00	5.00	4.00	5.00	4.00	4.25	4.75	5.00	4.50	-	
2	5.25	5.00	5.00	4.00	5.00	4.00	4.25	4.75	4.75	-	4.50	
	5.50	5.00	5.75	4.00	5.25	4.00	4.50	4.00	5.25	4.00	5.00	
3	5.50	5.00	5.50	4.00	5.25	4.00	4.50	4.00	5.00	4.00	5.00	
	5.50	5.00	5.00	4.50	5.50	3.75	5.25	4.25	4.75	5.00	4.00	
4	5.25	5.00	4.75	4.50	5.50	3.75	5.00	4.25	4.75	5.00	4.00	
	5.00	5.00	5.00	4.00	5.25	3.50	5.00	4.25	4.00	5.00	5.00	
5	5.00	5.00	5.25	4.00	5.25	3.50	4.75	4.50	4.00	5.00	4.75	
	4.25	4.75	5.50	3.50	5.75	3.75	4.00	4.25	4.75	4.75	5.25	
6	4.25	4.75	5.50	3.50	-	3.75	4.50	4.25	4.75	5.00	6.00	
	4.50	4.75	5.75	4.25	5.25	4.50	4.25	5.00	5.00	5.00	5.00	
7	4.75	4.75	5.75	4.00	5.25	4.75	4.25	5.00	5.50	5.00	4.75	
	4.75	4.75	5.75	4.00	5.25	4.75	5.00	5.00	5.25	4.75	-	
7	4.75	5.25	5.25	5.00	5.75	3.75	5.25	4.75	5.00	5.00	4.75	
	4.75	5.00	5.25	5.00	5.75	3.75	5.25	5.00	5.00	5.00	4.75	
	4.75	5.00	5.25	5.00	-	3.75	5.25	5.00	5.00	5.00	-	

<sup>a/</sup>Date that 50 percent of the buds per plant were opened.

<sup>b/</sup> Treat- ments	Cooling Treatment	Forcing Photoperiod
A	Natural Cooling	Normal Day
B	Natural Cooling	Short Day
C	Natural Cooling	Normal Day plus Cyclic Lighting
D	Natural Cooling	Normal Day for Six Weeks Then Finish in 70° F. Greenhouse
F	Refrigerated Storage at 40° F.	Normal Day
G	Greenhouse Check	Normal Day

<sup>c/</sup>Not matured by May 24, 1962.

TABLE XVI (Continued)

Pot No.	Treatments											
	50° F.						60° F.					
	A	B	C	D	F	G	A	B	C	D	F	G
8	4.50	5.25	5.25	4.00	5.75	3.75	5.00	4.50	5.25	5.00	5.25	
	4.50	5.00	5.25	4.00	5.75	3.75	5.00	4.50	5.50	5.00	5.25	
9	4.50	5.00	5.25	4.00	5.75	4.00	5.00	4.75	5.50	5.00	-	
	5.00	4.00	5.00	3.50	5.00	4.50	4.75	4.25	4.25	4.00	5.50	
	5.25	4.00	5.00	3.50	5.25	4.50	4.50	4.25	4.25	4.25	5.75	
10	5.25	4.00	5.00	3.50	5.25	4.50	4.50	4.25	4.25	4.00	5.75	
	5.00	4.50	5.00	4.25	5.00	3.50	5.25	4.75	4.50	5.00	5.25	
11	5.00	4.50	4.75	4.25	4.75	3.50	5.25	4.75	4.50	4.75	5.25	
	5.25	4.50	5.00	4.25	4.75	3.50	5.25	4.75	4.50	4.75	5.25	
	5.50	4.50	4.50	4.25	5.00	4.00	4.75	5.00	5.50	4.75	5.25	
12	5.50	4.50	4.50	4.25	5.00	4.00	5.00	5.00	5.50	5.00	5.25	
	5.50	4.50	4.50	4.50	5.00	4.00	5.00	4.75	5.25	4.75	5.75	
	5.25	4.75	4.25	4.50	5.25	4.00	5.25	4.50	4.75	4.50	5.50	
13	5.25	4.75	4.50	4.50	5.25	4.00	5.50	4.75	4.75	4.25	-	
	4.75	4.00	5.00	3.50	5.00	4.00	5.00	5.00	5.50	4.50	5.25	
	4.75	4.00	5.00	3.50	5.00	4.00	5.00	5.00	5.50	4.75	-	
14	4.75	4.25	4.75	3.50	5.00	4.00	4.75	5.00	5.50	4.75	-	
	4.75	5.00	4.75	3.25	4.75	4.00	4.50	5.00	5.00	4.75	5.25	
15	4.75	5.00	4.75	3.25	4.75	4.00	4.50	5.00	5.00	4.75	5.25	
	4.75	5.00	4.75	3.50	4.75	4.00	4.50	4.75	4.75	4.75	5.25	
	4.75	5.00	4.75	4.00	5.00	4.50	4.50	4.50	5.00	4.50	6.00	
16	4.75	4.75	4.75	4.00	5.25	4.50	4.75	4.50	5.00	4.50	5.50	
	4.75	5.00	4.75	4.25	5.25	4.00	4.75	4.50	5.00	4.50	-	
	4.50	5.00	5.00	4.50	5.25	4.00	5.25	4.50	5.00	5.00	5.25	
Average	4.50	4.75	5.00	4.50	5.25	4.00	5.25	4.50	5.00	5.00	5.00	
	4.94	4.77	5.03	4.07	5.23	3.98	4.83	4.60	4.91	4.70	5.13	

TABLE XVII

THE EFFECTS OF COOLING TREATMENTS, AND PHOTOPERIOD TREATMENTS  
IN 50° AND 60° F. FORCING GREENHOUSES, ON THE AVERAGE  
FLOWER SIZE (LENGTH) IN INCHES OF ACE LILIES  
AT MATURITY<sup>a/</sup>. THREE MATURE FLOWERS  
PER PLANT WERE MEASURED.  
(16 PLANTS PER TREATMENT)

Pot No.	Treatments <sup>b/</sup>											
	50° F.						60° F.					
	A	B	C	D	F	G	A	B	C	D	F	G <sup>c/</sup>
1	5.50	5.00	5.25	4.75	5.75	4.50	5.00	5.25	6.00	5.50	5.50	
	5.50	5.00	5.25	4.75	5.50	4.50	5.00	5.25	6.00	5.50	5.50	
	5.50	5.00	5.25	4.75	5.50	4.50	5.00	5.25	5.75	-	-	
2	6.00	5.25	6.00	4.75	5.75	4.50	5.50	5.00	6.25	4.75	6.00	
	6.00	5.50	5.75	4.75	5.75	4.50	5.50	5.00	6.25	4.75	6.00	
	6.00	5.50	5.75	4.75	5.75	4.50	5.50	5.00	6.00	4.75	6.00	
3	6.00	5.50	5.50	5.00	6.00	4.50	5.50	5.00	5.25	5.25	4.75	
	6.00	5.50	5.25	5.00	6.00	4.50	5.50	5.00	5.25	5.25	5.00	
	6.00	5.50	5.25	5.00	6.00	4.50	5.50	5.00	5.25	5.25	5.00	
4	5.25	5.50	5.50	4.75	6.00	4.50	5.50	5.00	5.25	5.25	6.00	
	5.25	5.50	5.50	4.75	6.00	4.50	5.25	5.00	5.00	5.25	5.75	
	5.25	5.50	5.50	4.75	6.00	4.50	5.25	5.00	5.25	5.00	5.75	
5	5.00	5.50	5.75	4.00	6.00	4.00	5.50	5.00	5.75	5.25	6.25	
	5.00	5.50	5.75	4.00	6.00	4.00	5.50	5.00	5.75	5.25	6.25	
	5.00	5.50	5.75	4.00	-	4.00	5.50	5.00	5.75	5.25	-	
6	5.00	5.50	6.00	4.75	5.75	5.25	5.75	5.75	5.75	5.00	5.75	
	5.25	5.50	6.00	4.75	5.75	5.25	5.75	5.75	6.00	5.25	5.75	
	5.25	5.50	6.00	4.50	5.75	5.25	5.75	5.75	6.00	5.25	-	
7	5.50	5.75	5.75	5.00	6.00	4.50	5.75	5.75	6.00	5.50	5.50	
	5.50	5.50	5.75	5.00	6.00	4.50	5.75	5.75	6.00	5.50	5.50	
	5.50	5.50	5.75	5.00	-	4.50	5.75	5.75	6.00	5.25	-	

<sup>a/</sup>Date that 50 percent of the buds per plant were opened.

<sup>b/</sup> Treat- ments	Cooling Treatment	Forcing Photoperiod
A	Natural Cooling	Normal Day
B	Natural Cooling	Short Day
C	Natural Cooling	Normal Day plus Cyclic Lighting
D	Natural Cooling	Normal Day for Six Weeks Then Finish in 70° F. Greenhouse
F	Refrigerated Storage at 40° F.	Normal Day
G	Greenhouse Check	Normal Day

<sup>c/</sup>Not matured by May 24, 1962.



TABLE XVII (Continued)

Pot No.	Treatments											
	50° F.						60° F.					
	A	B	C	D	F	G	A	B	C	D	F	G
8	5.25	6.00	5.75	4.75	6.25	4.50	5.50	5.00	6.00	6.00	5.75	
	5.25	5.75	5.75	4.75	6.25	4.50	5.50	5.25	6.00	5.50	5.75	
	5.25	5.75	5.75	4.75	6.25	4.50	5.50	5.25	6.00	5.50	-	
9	5.50	5.00	5.50	4.00	5.75	4.50	5.75	4.75	5.25	5.00	6.25	
	5.50	5.00	5.50	4.00	5.75	4.50	5.50	4.75	5.25	5.00	6.25	
	5.50	5.00	5.50	4.00	5.75	4.50	5.50	4.75	5.25	5.00	6.25	
10	5.50	5.00	5.50	4.75	5.50	4.00	6.00	5.00	5.75	5.25	6.00	
	5.50	5.00	5.50	5.00	5.25	4.00	6.00	5.00	5.75	5.00	6.00	
	5.50	5.00	5.50	5.00	5.25	4.00	6.00	5.00	5.75	5.25	6.25	
11	6.00	5.00	5.00	5.00	5.75	4.75	5.25	5.50	6.00	5.00	6.25	
	6.00	5.00	5.00	5.00	5.75	4.75	5.25	5.50	6.00	5.00	6.25	
	6.00	4.75	5.00	5.00	5.75	4.75	5.25	5.25	6.00	5.00	6.00	
12	6.00	5.25	5.00	5.25	6.00	4.50	6.00	5.00	5.25	5.00	6.25	
	5.75	5.25	5.00	5.25	6.00	4.50	6.00	5.00	5.25	5.00	6.25	
	5.75	5.25	5.00	5.25	6.00	4.50	6.00	5.25	5.25	5.00	-	
13	5.25	5.00	5.50	4.00	5.50	4.25	5.50	6.00	6.00	5.00	6.00	
	5.25	5.00	5.50	4.00	5.50	4.25	5.25	6.00	6.00	5.00	-	
	5.25	5.00	5.25	3.75	5.50	4.25	5.25	6.00	6.00	5.00	-	
14	5.25	5.25	5.25	4.00	5.00	5.00	5.00	5.75	6.00	5.25	6.00	
	5.25	5.25	5.25	4.00	5.00	5.00	5.00	5.75	5.75	5.25	6.00	
	5.25	5.25	5.25	4.00	5.00	5.00	5.00	5.50	5.75	5.00	6.00	
15	5.50	5.50	5.25	4.75	5.25	5.00	5.00	5.25	5.75	5.00	6.75	
	5.50	5.50	5.25	4.75	5.25	5.00	5.25	5.25	5.75	5.00	6.50	
	5.50	5.50	5.25	4.75	5.25	5.00	5.25	5.25	5.75	5.00	-	
16	5.50	5.25	5.25	5.00	5.50	5.00	5.75	5.25	6.00	5.25	6.25	
	5.50	5.25	5.25	5.00	5.50	5.00	5.50	5.25	6.00	5.75	6.25	
	5.50	5.25	5.25	5.00	5.50	5.00	5.50	5.25	6.00	5.50	6.25	
Average	5.50	5.31	5.46	4.66	5.70	4.58	5.48	5.27	5.75	5.18	5.94	

VITA

George E. Rogers

Candidate for the Degree of  
Master of Science

Thesis: THE EFFECTS OF NATURAL COOLING AND REFRIGERATED STORAGE IN THE FALL, FOLLOWED BY VARIOUS PHOTOPERIODS AT THREE FORCING TEMPERATURES, ON THE GROWTH OF LILIUM LONGIFLORUM, VARIETIES GEORGIA AND ACE

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